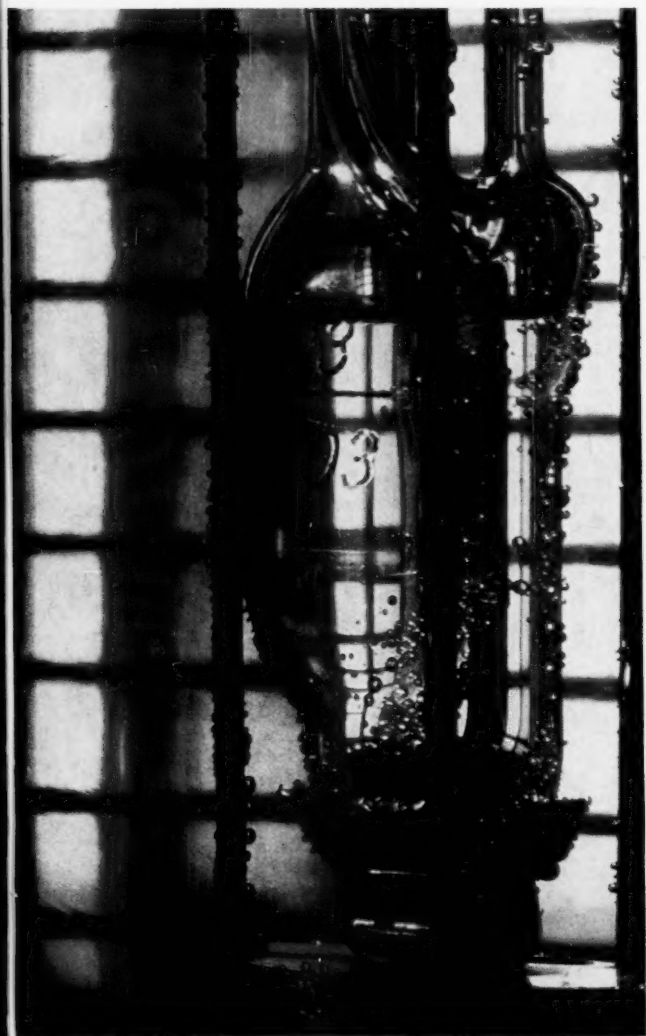


Chemical Week



Eyes on Mexico. New Pemex chief fixes rules for foreign petrochemical investors . p. 22

◀ Lubes in the lab—new additives toughen silicones for high-temperature service p. 35

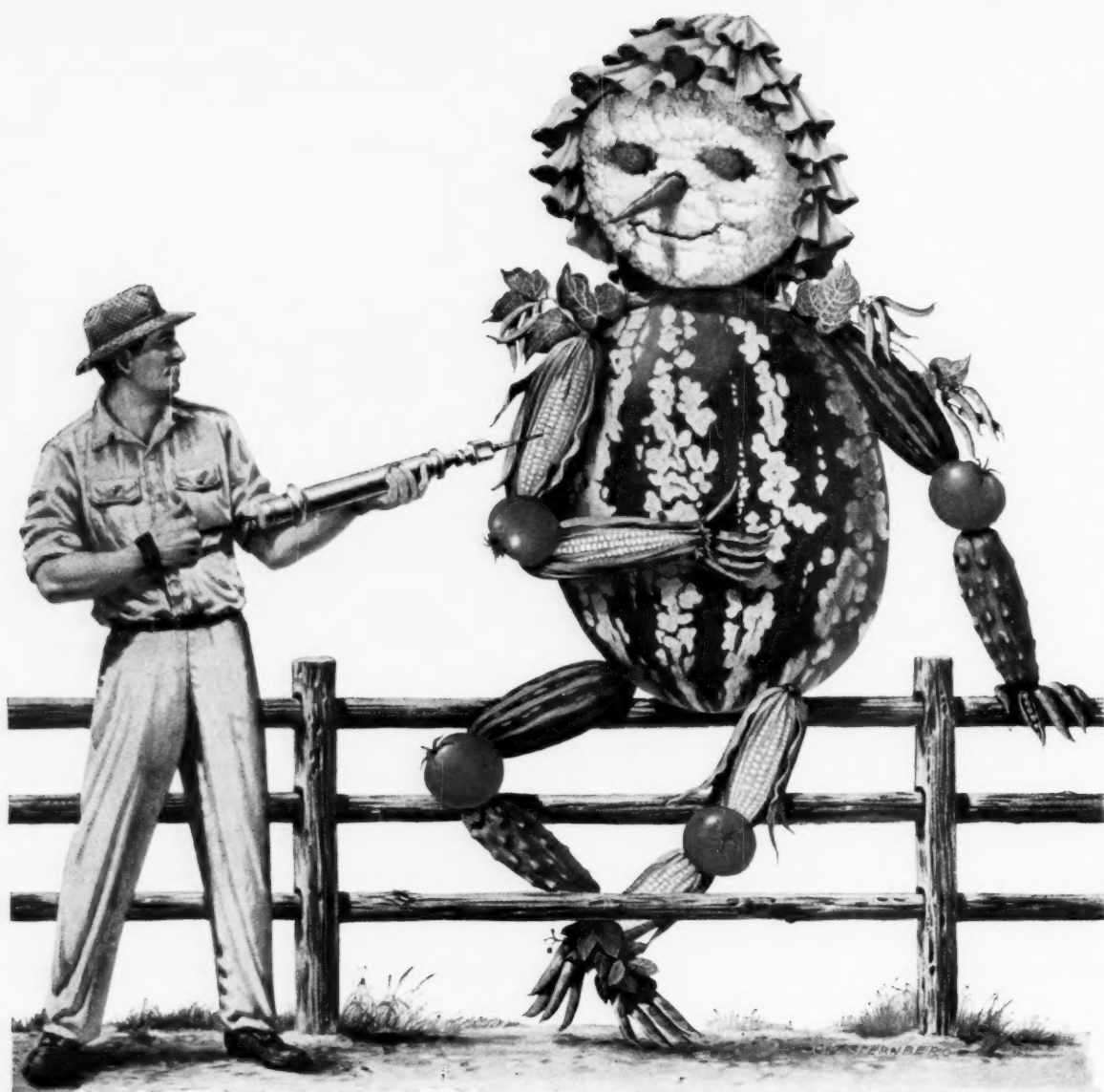
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What does MCA do for you? Special report on your industry association p. 68

December 20, 1958

STEVENS RICE
UNIVERSITY MICROFILMS
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Booster shots for bumper crops

All living things need help to grow, the fruits of the earth no less than the children of man. In the West, crop yields are kept high with nitrogen-rich ammonia fertilizer by Shell Chemical.

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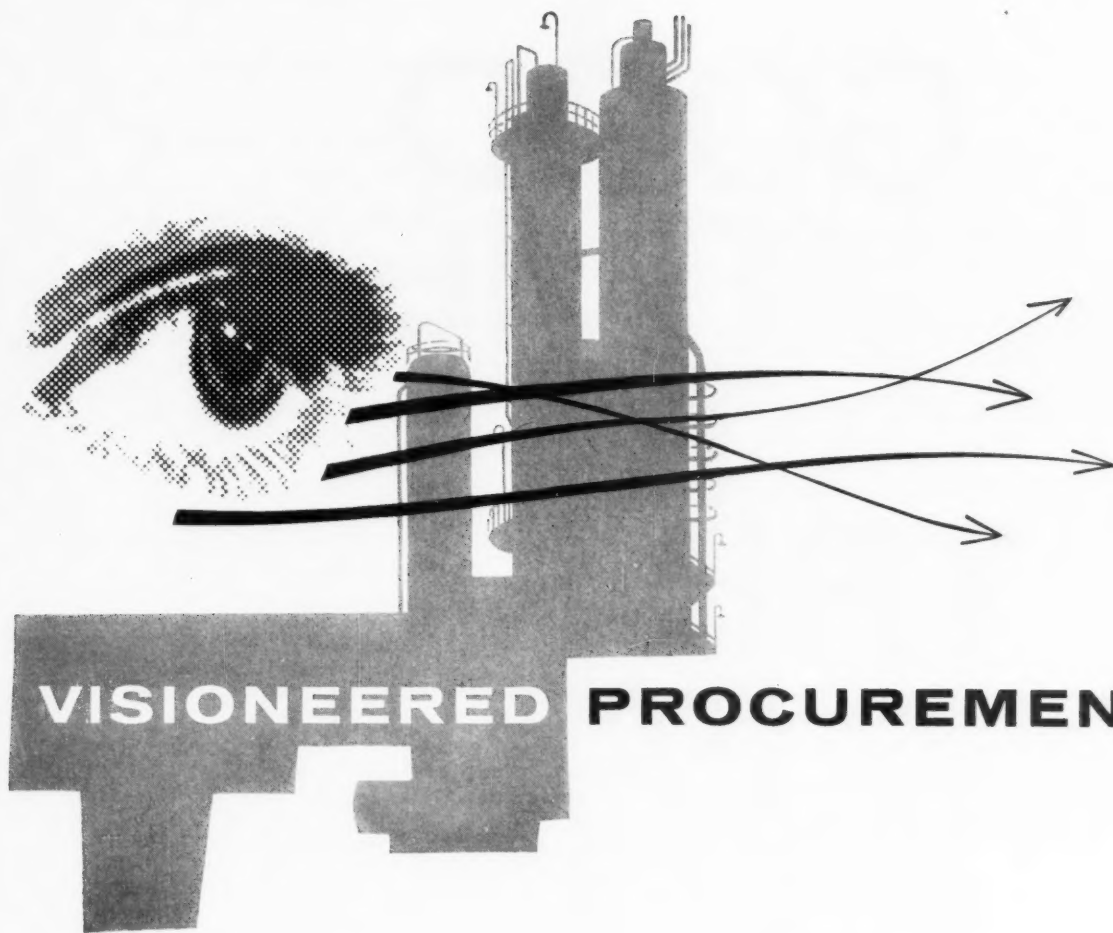
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Chemical Week

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THE MAN WITH THE



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reduce
bag costs
\$4.05 per M

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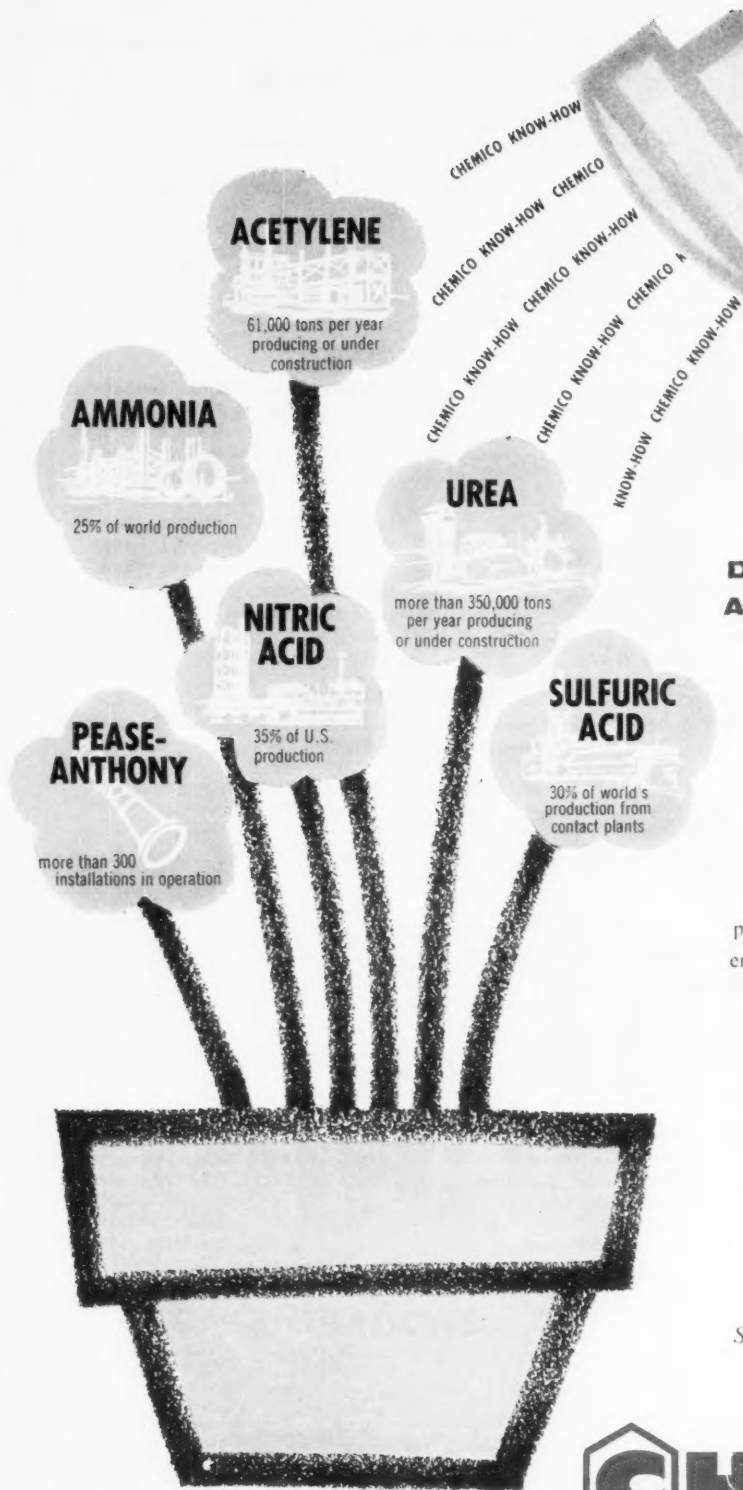
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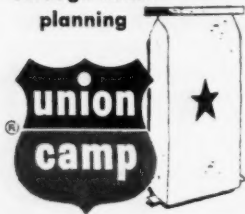
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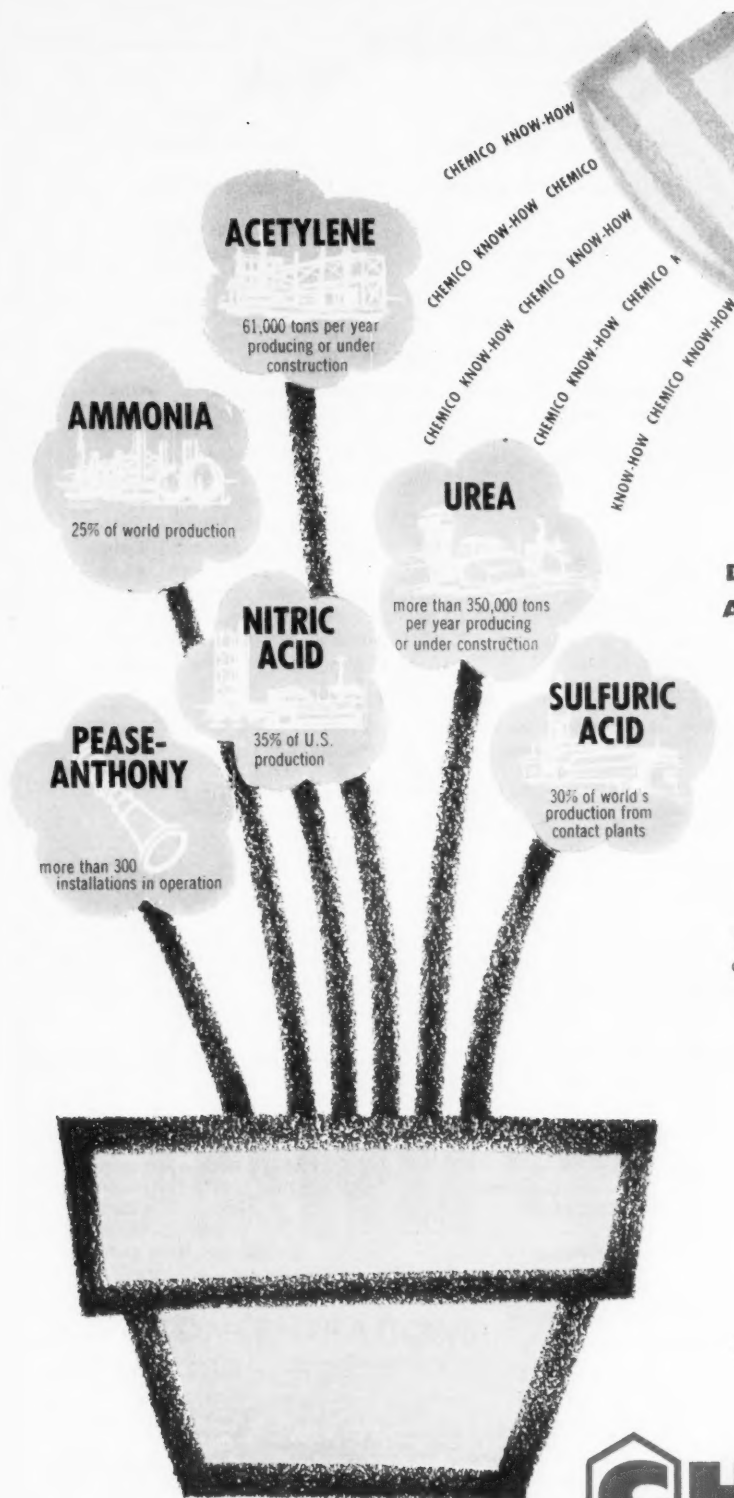
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5

WHAT'S AHEAD FOR 1959? That's the question all of us are having to cope with as the new year gets closer. Here on CW, we've been figuring out the answers from two points of view—for our own '59 budget, and for our annual forecast report, which will appear next week in our end-of-the-year issue.

We're bullish on both counts: we plan to step up our editorial services for you; and we see substantially better business ahead for the chemical process industries.

Here are some of the highlights of our forecast for '59:

- The U.S. gross national product should hit \$465 billion, up 7% from this year's \$435 billion.

- Industrial output in the U.S. will hit an index figure of 147 (1947-49 = 100), up 10% from this year's 134.

- Sales volume for the chemical process industries should be 10% higher than '58's \$80-billion total. Sales of chemicals and allied products should be up \$2.8 billion (12%) over this year's \$23.2 billion.

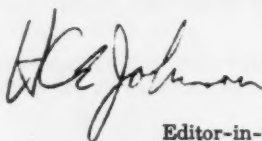
- Chemical companies' spending for research and development should total \$630 million, up 5% from the estimated \$600 million spent in '58.

How valid are these predictions? No one can be perfect, but I think we did quite well a year ago in predicting '58 chemical prices and production:

What will the chemical price index look like a year from now? It's been steadily inching upward since Jan. '57; and chances are that a similar pattern, although with a somewhat less apparent incline, will emerge over the next 12 months.

CW's output index, which has undergone some definite dips and climbs, will probably continue the fourth-quarter '57 decline, at least through the early months of the year. Anticipated pickup in business activity later on, though, should prod '58 production close to or, at the least, slightly below the average of '57.

If our predictions for '59 turn out as well, our Forecast report next week should provide useful guideposts for your planning.



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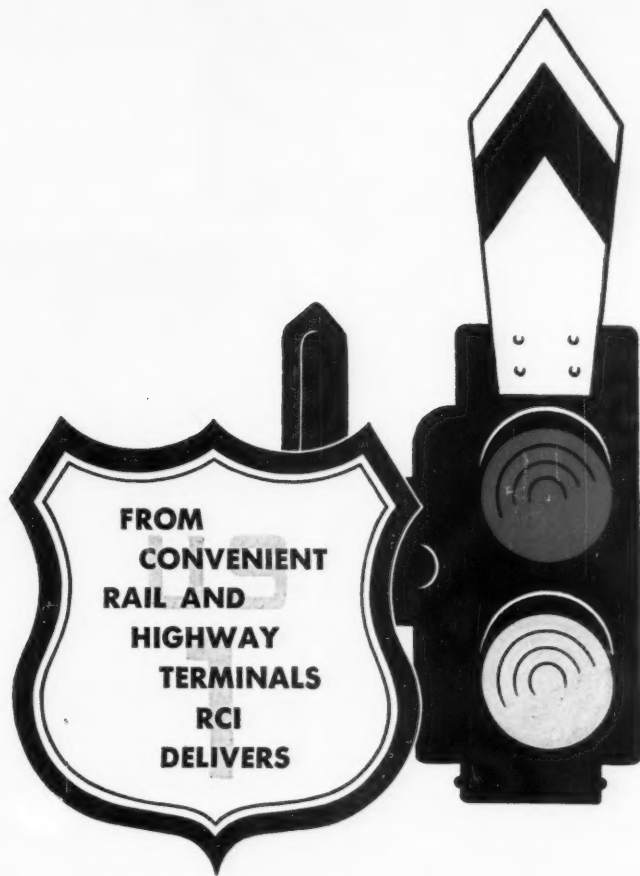
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THESE THREE



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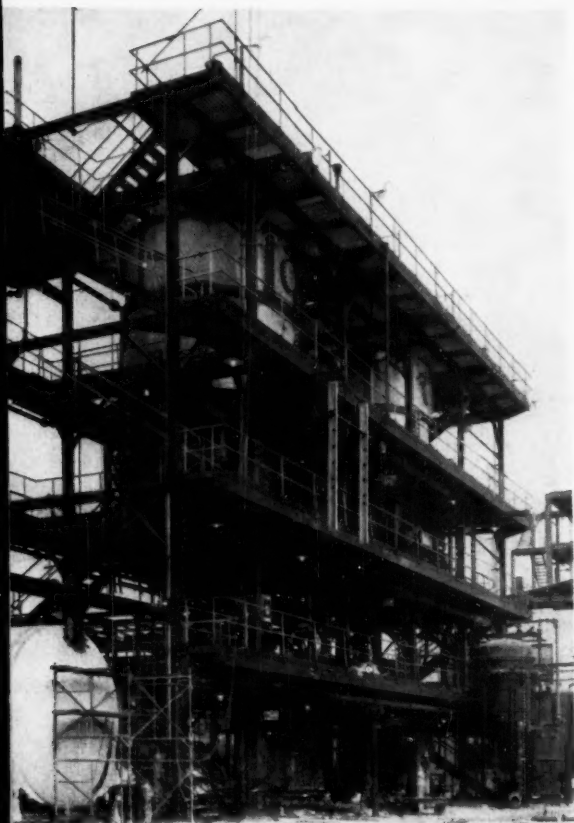
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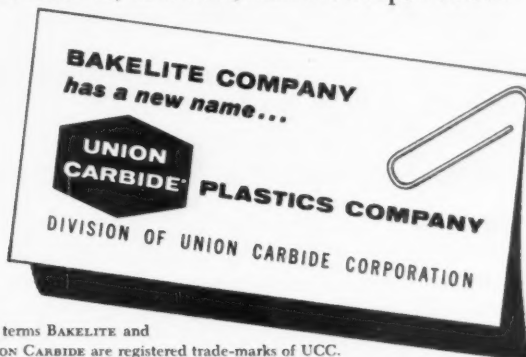


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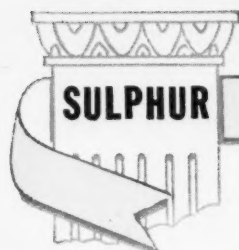
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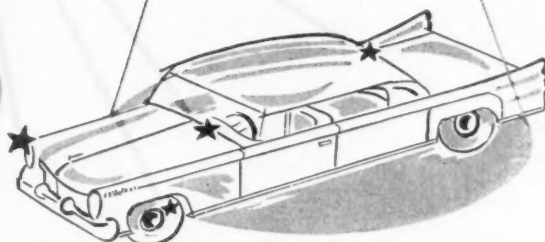
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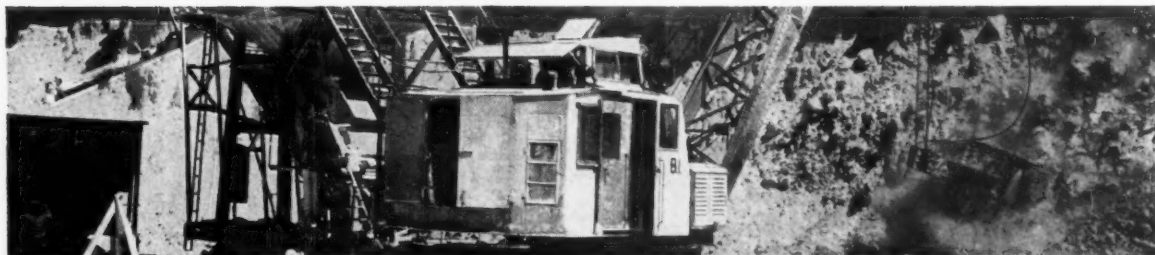


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OPINION

'Members of the Firm'

TO THE EDITOR: Your article "Which Way Is Best for Your Engineering?" (*CW*, Nov. 15, p. 105, which discussed the pros and cons of do-it-yourself engineering—Ed.) overlooks us. However, since our function is more or less unique and our services utilized mainly by smaller companies (\$25-million sales/year maximum) we won't feel hurt.

In addition to project design on a job-to-job basis and by-product development (*CW*, Aug. 29, '53, p. 38), we are currently supplying complete plant engineering, project supervision, engineering purchasing and development direction services on a continuing basis to a number of noncompetitive companies, all in the chemical, metallurgical or related industries. In this way, each company has the equivalent of a complete engineering department—with specialists in each major field—for less expenditure than their own department would cost, and, for the smaller companies, less than the salary of one experienced full-time engineer.

Also, since we buy equipment for all our clients, we are in a better buying position and can usually save them a substantial amount yearly on purchases. Items purchased for clients are billed to them at our cost.

Since we firmly adhere to our policy of having no clients that are in any way competitive, we have come to be considered as members of the firm of most of our clients and serve in many ways other than purely engineering. Also, we serve as a common bond between our clients, and one company is frequently able to help another with some special service, equipment loan or laboratory work.

We have been operating in this manner for approximately nine years, and have apparently succeeded in keeping our clients and ourselves reasonably happy. . . .

ALBERT W. SPITZ
Albert W. Spitz & Associates
437 North Sterling Rd.
Elkins Park, Pa.

Take It to Heart

TO THE EDITOR: Your "Viewpoint" about business men in politics (*CW*, Nov. 22, p. 14) is a very timely item. I believe, as the months continue on and we see more clearly the results



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THE LINDE oxygen plant shown here has been serving a leading chemicals producer "over-the-fence" continuously since 1949. Its operating log shows a 98%+ availability factor. Next year, capacity will go up from 360 to 800 tons of oxygen a day.

You can expect the same continuity of supply with a LINDE packaged plant serving your process. Your LINDE plant will be the product of fifty years' experience in the design, manufacture, and operation of air separation plants and low temperature equipment. LINDE is uniquely qualified to provide air separation plants for the supply of oxygen and/or nitrogen as well as the associated low temperature equipment for:

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- purifying hydrogen and helium
- separating hydrogen from coke oven gas
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- upgrading of natural gas
- other extremely low temperature processes.

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
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Find out how these outstanding properties can improve your product or process. Write for F-6500.

Union Carbide Chemicals Company

Division of  Corporation

30 East 42nd Street, New York 17, N. Y.

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OPINION

of the political efforts of the various unions, more chemical managements will take to heart the closing comment in "Viewpoint."

WILLIAM F. MITCHELL
General Manager
Chemical Division
General Mills, Inc.
Kankakee, Ill.

The comment referred to by Reader Mitchell: "If [Chemical] unions actively encourage their own employees to get into politics, can chemical management afford to do less?"—ED.

MEETINGS

American Assn. for the Advancement of Science, annual meeting, Sheraton-Park Hotel, Washington, D.C., Dec. 26-31.

Society of Chemical Industry, Perkin Medal Dinner, Waldorf-Astoria Hotel, New York, Jan. 9.

Compressed Gas Assn., 46th annual meeting, Waldorf-Astoria Hotel, New York, Jan. 19-20.

Assn. of American Soap and Glycerine Producers, 32nd annual convention theme: soaps in stereo '59; Waldorf-Astoria Hotel, New York, Jan. 20-22.

American Society for Engineering Education, Engineering Graphics Division, annual midwinter meeting, Wayne State University, Detroit, Jan. 21-23.

American Management Assn., special conference on plastic packaging materials, Biltmore Hotel, New York, Jan. 21-23.

American Chemical Society, South-eastern Texas Section, third biennial symposium on hydrocarbon chemistry, Shamrock Hilton Hotel, Houston, Jan. 22-23.

Society of Plastics Engineers, 15th annual technical conference, Commodore Hotel, New York, Jan. 27-30.

Parenteral Drug Assn., dinner meeting, Statler Hotel, New York, Feb. 6.

American Institute of Mining, Metallurgical and Petroleum Engineers, annual meeting, San Francisco, Feb. 15-19.

Chemical Market Research Assn., meeting; theme: chemicals for the textile industry; Dinkler Plaza Hotel, Atlanta, Feb. 18-19.

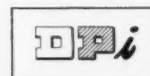
Technical Assn. of the Pulp and Paper Industry, 44th annual meeting, Commodore Hotel, New York, Feb. 23-26.

American Institute of Chemical Engineers and American Chemical Society, sixth annual joint technical meeting, King Edward Hotel, Beaumont, Tex., March 13.



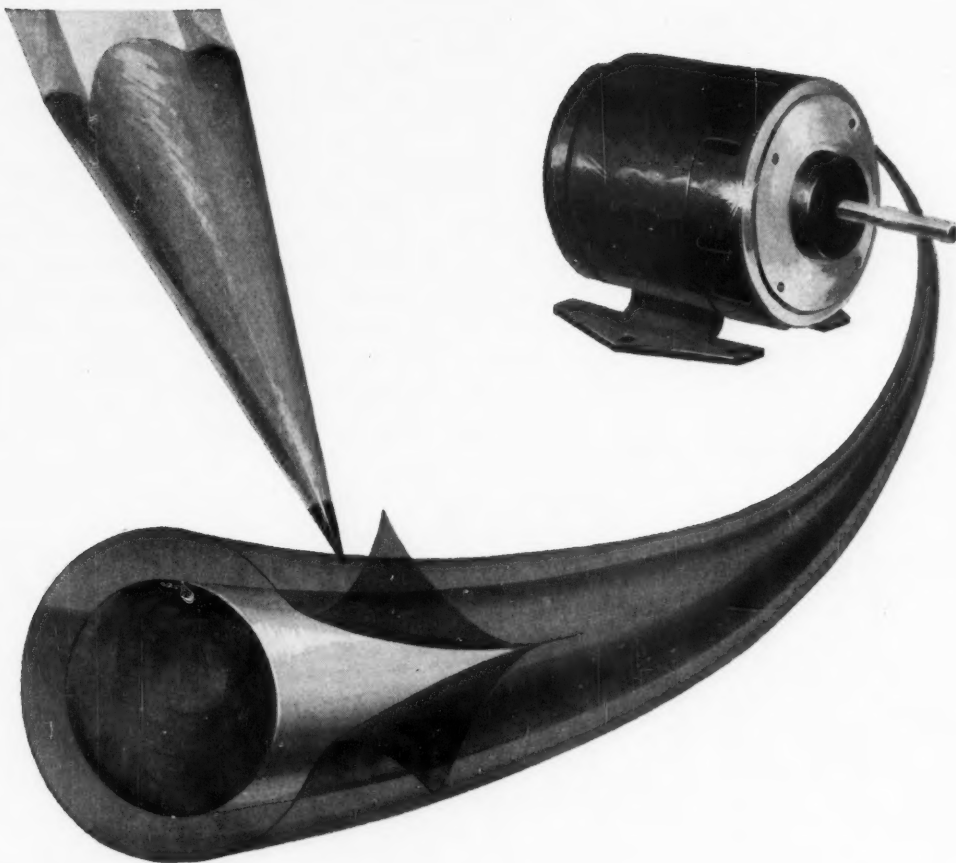
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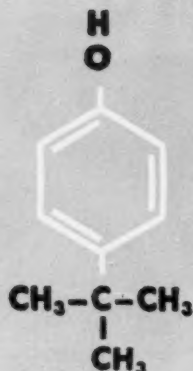
Under suitable conditions Butvar and Formvar are reactive with phenolics, melamines and other thermosetting resins, and, even in fairly minor quantities, impart significantly improved adhesion, toughness and flexibility. Why not put these unique properties to work in your product. We'll be glad to help. Write for full information and product literature to Shawinigan Resins Corporation, Dept. 1151, Springfield 1, Mass.

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Imparts anti-cracking properties to rubber tires. Useful as an intermediate for curing agents in butyl rubber.



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AMERICA'S MOST COMPLETE LINE OF SURFACTANTS

Business Newsletter

CHEMICAL WEEK

December 20, 1958

Construction boosts should help spur '59 chemical sales.

McGraw-Hill's Dept. of Economics predicts total construction activity next year will be almost 7% higher than in '58. Total volume of construction "put in place" will hit a record \$52 billion, compared with \$48.8 billion this year. And for the first time since '55, the increase in dollar expenditures will be greater than the rise in construction costs, which means actual physical volume will increase.

The building breakdown: nonfarm residential, up 9.7%, to \$20.3 billion; industrial, down 1.4%, to \$2.4 billion; commercial, no change, \$3.6 billion; public utilities, up 3.7%, to \$7.6 billion; highways, up 11.1%, to \$6 billion; schools, up 5.9%, to \$3.6 billion; hospitals and institutions, up 10%, to \$1.1 billion; conservation and development, up 8-10%, to \$1.1 billion; military, up 16.7%, to \$1.4 billion.

Moreover, spending for new plant and equipment is heading up.

The government's quarterly survey of capital expenditures indicates that U.S. businesses—including process industries—intend to increase these outlays about 1.7% in first-quarter '59, compared with last-quarter '58 (see also *Washington Newsletter*, p. 27).

•

Warner-Lambert and Reynolds Tobacco merger talks are off.

Negotiations ended last week with top officers of both companies citing disagreement on certain "important aspects" as a bar to the proposed merger (*CW*, Oct. 11, p. 29). Sources close to the company say Reynolds turned thumbs down on the drug firm's desire to retain most of its autonomy. Moreover, a large group of W-L stockholders reportedly opposed the one-for-one exchange of stock called for by merger terms.

The news caused topsy-turvy action on the New York Stock Exchange. Warner-Lambert stock immediately plunged to \$78/share from its previous closing price of \$83.50. Later in the day, however, it shot back up to \$88/share.

•

Other pharmaceuticals, too, have caused a stir on Wall Street.

Upjohn's long-awaited first public stock offering went on the block (*CW*, Nov. 29, p. 21). Offered at \$45/share, the 2.4 million shares sold by a group of principal stockholders were quickly snapped up, and soon were trading in the \$49-50 range.

The fact that these much-in-demand Upjohn shares were selling readily at more than 28 times earnings appeared to be one reason behind the spectacular advance in other drug stock prices last week. In just two days of trading, Johnson & Johnson shares spurted 22 points, Pfizer added

Business

Newsletter

(Continued)

12, Parke, Davis 10, Vick 9, and Merck 5. Most other drug issues completed the trend by taking on from 1 to 5 points.

•
And new pharmaceutical products are counted on by American Cyanamid for enhancement of future earnings.

Company President Wilbur (Weed) Malcolm says '58 earnings will be something like 25% less than last year's; but—citing several new steroids, enzymes and other pharmaceuticals as having "high profit potential"—he expresses greater optimism for '59 and the '60s.

Also, Malcolm stresses confidence in Cyanamid's acrylic fiber prospects. He told a Cleveland securities analysts' meeting late last week of Cyanamid's plans to double acrylonitrile capacity at its plant near New Orleans, bringing it to 100 million lbs./year; and of construction now under way at Santa Rosa, Fla., on a plant designed to turn out 27 million lbs./year of Creslan fiber.

New polypropylene fibers probably won't compete with acrylic products, Malcolm said. "Applications for acrylic fibers are too varied to be disturbed by this development."

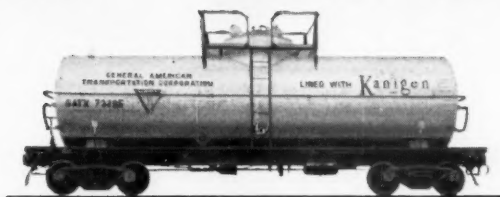
But Malcolm termed Cyanamid's recent venture into thermoplastics "not rewarding." He blamed poor results on "drastic price cuts on competitive styrene products" and on the recession, which discouraged prospective customers from product testing and market development.

•
Colgate-Palmolive reportedly is about to acquire Wildroot Co. (Buffalo, N. Y.). Thus, C-P—which last year ended its distribution of Chesebrough-Pond's Vaseline hair tonic (*CW Business Newsletter*, Feb. 22)—appears about ready to offer another men's hair tonic. If the \$10.5-million deal is consummated, it will be C-P's first acquisition since it took over Kay Daumit Inc. in '46.

•
Look for Vitro Corp. to acquire Crane Co.'s holdings in Heavy Minerals Co. (Chattanooga, Tenn.). Negotiations are well advanced, should be completed this week. If approved, the deal will bring Vitro's holdings to 87½% of the Tennessee firm's outstanding stock. The minority interest is held by a subsidiary of a French firm, Pechiney.

•
Red No. 32 can't be used to color oranges after next March 1; and any other coal-tar colors found to be "toxic" will also be banned from use in food unless the new Congress changes the law. That's the effect of this week's U. S. Supreme Court ruling supporting the Food & Drug Administration's interpretation of the present law. The court held: (1) certified use of a coal-tar color depends on whether the substance itself is harmless; and (2) FDA has no authority to permit use of a toxic coal-tar product in specific foods under a tolerance system.

THE TANK CAR NEWS OF 1958



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KANIGEN, a unique patented process, deposits a hard, uniform, corrosion-resistant nickel-alloy coating on tank car interiors . . . lasts four to six times as long as phenolic, epoxy or neoprene linings. You can load at high temperatures that would destroy other linings. For example, 73% caustic soda can be piped in at unlimited temperatures.

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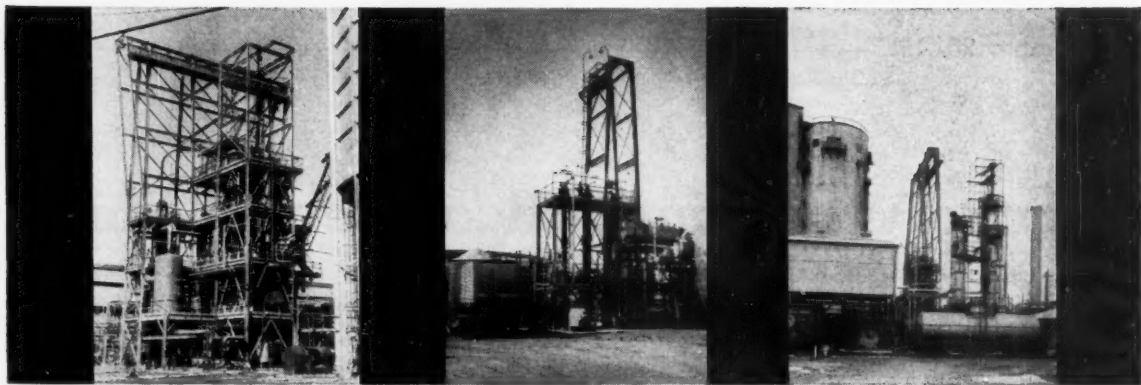
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That's why plant owners who seek the rewards of high-pressure processing have come to rely on the plant-proven experience of Vulcan-Cincinnati. The capital required for a high-pressure plant installation demands the kind of engineering that insures the most favorable economics in terms of investment, operating costs, yield and product quality. That's why . . . When greater yield requires a high-pressure process . . . it's a job for Vulcan-Cincinnati.

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Man to Watch in Mexican Petrochemicals

Prospective foreign investors have long been awaiting a clear statement of the future roles of government and private industry in developing Mexico's embryonic petrochemical industry (*CW*, Aug 16, p. 39). This week the country's new leadership made a tentative start on the problem, set out to clean up a bill hastily enacted by the former government.

But, as Mexico's three-week-old administration begins to put its house in order, it is discovering that policy lines must be made a lot more definite before much U.S. chemical capital is lured south of the border.

Since the 1941 oil law was passed, the unwritten policy had been that basic petrochemical raw materials would be controlled by the government-owned oil monopoly, Petroleos Mexicanos (Pemex). Still a mystery was the future extent of Pemex's participation in production of finished products (e.g., resins, solvents, etc.).

Then, on Nov. 29 of this year—its last day in office—President Ruiz Cortines' administration passed a long, fuzzily worded "oil law," which stated that Pemex was to control all production, storing, and selling of "those (petroleum) derivatives which are susceptible to serve as raw materials for basic industries."

This left the business community in confusion, so a "bill of particulars" was hastily thrown together, handed around the following week.

Chemical men were amazed to discover that the government's notion of

basic raw materials—to be produced under Pemex control—included polyethylene, butadiene, styrene, ammonia, polystyrene, acetone and phenol. "Basic raw materials" seemed to be an open-end definition that could include anything the government wanted.

While specifying government con-

policy regarding Pemex's plans.

In his first exclusive interview with the foreign press, Roldan told *CW* that "for the present," Pemex intends to build (with no equity shareholders) four plants. They would make polyethylene, butadiene, styrene and anhydrous ammonia.

The polyethylene plant would come first, has been in the planning stage for years. Eventually, Roldan admits, Pemex may go into "one or two" other "basic petrochemicals."

Foreign Capital: New foreign capital — but not foreign control — would apparently be welcome for these projects. For chemical projects outside of Pemex's domain, foreign investors are welcome, but might get better consideration if they go in with "some" Mexican capital, private or government — if it's available.

Roldan's record may give prospective investors a somewhat clearer picture of what's ahead. Before taking on his Pemex job, he headed the Altos Hornos steel mill (backed by government and private capital), which ex-

panded enormously under his guidance. By-product manufacture (begun under Roldan's tenure) is epitomized by the \$10-million St. Gobain-Mexican fertilizer plant.

Roldan has a reputation for handling labor skillfully, is international-minded, and has shown talent in attracting foreign capital. He handled recently concluded negotiations with three New York banks for \$20 million



New Pemex chief Roldan: 'Welcome' or 'No Trespassing'?

trol, the law appeared to allow private companies to share investments with Pemex or another government agency. But it didn't look as if there was much room for U.S. companies to own or control petrochemical plants.

More Promising Policy: The new Pemex president, Pascual Gutierrez Roldan, is beginning to hew out a more definite—and more promising—

to finance production of pipe for natural gas transmission.

And Lots of Interest: Foreign interest in Mexico's petrochemical future is already perking. A new Mexican investment company has just been set up with capital from Germany (Krupp and Siemens) and the U.S. (Allen & Co., which controls Syntex SA). The new combine, called Intercontinental S.A., will be one of Mexico's biggest private-investment ventures. First on its agenda: a \$10-million fertilizer plant in Sonora. And once Pemex really clarifies its policies, Intercontinental may push into petrochemicals.

Mexico's first big petrochemical plant may be European-backed. Since the inauguration of President Lopez Mateos, an influx of important European businessmen, industrialists and financiers has been noted. Montecatini is reported to be keenly interested in a Mexican petrochemicals venture. And Oronio de Nora (Milan), which built Pennsalt's Mexican caustic soda plant earlier this year, could easily put up a petrochemical plant.

Terms for Control: But Roldan still has some obstacles to overcome before he can expect U.S. companies to help usher in his heralded petrochemical boom. "Basic" and "nonbasic" petrochemicals will have to be defined (Roldan promises to issue a list soon). And U.S. companies will want to know on exactly what financial terms they will be able to participate. Several U.S. producers tell *CW* they are not interested in going into a venture unless management decisions will be in their hands.

A paucity of short-range incentive is another barrier to greater investment in Mexico. The market is still too small to support the relatively huge output of a typical U.S. petrochemical unit. For some products, only batch operations are feasible.

And Roldan still faces strong elements of "antiforeign" nationalism that could complicate his plans to draw in U.S. and European capital. Nevertheless, he promises "some big petrochemical announcements" within the next couple of months.

Shell Decentralizes

Having put more than \$130 million into expansion projects over the past seven years, Shell Chemical Corp. management this week decided that the company's centralized organization is outmoded. Starting Jan. 1, operations will largely be in the hands of the general managers of four newly established divisions and one previously constituted division.

President Richard McCurdy tells *CW* each division will be fully integrated, having its own research, production and marketing organization.

Overriding reason for the move, McCurdy explains, is the corporation's growth since it was promoted from divisional to subsidiary status within the Shell Oil system 13 years ago. Sales of chemical products have mounted about sixfold over that period, now exceed \$200 million/year. Physical volume of chemicals sold: more than 1 million short tons/year. And the company now operates eight large chemical and rubber plants, four small alcohol denaturing units.

Top Officers Realigned: But one reason for the timing of the reorganization is that one of the three incumbent vice-presidents—Leo Steck—has reached retirement age. Under the new organizational scheme, there will be four vice-presidents, all based in corporate headquarters — New York — and working on matters involving more than one division or the company as a whole.

Continuing in vice-presidential rank will be Cecil Humphreys and George Monkhouse. Moving up to vice-presidential stature: Bernard Downey, now general manager of manufacturing operations, and George Huldum, Jr., now manager of chemical sales.

Carryover division is the ammonia division, principal ammonia and urea producer in the Pacific Coast area, with headquarters at San Francisco and plants at Shell Point and Ventura, Calif. Lawrence Roberts—now manager of operations in that division—will succeed Monkhouse as divisional manager.

Four New Divisions: Largest of the

new divisions will be the industrial chemicals division, to be headed by Alfred Fleer. It will operate plants at Norco, La.; Dominguez and Martinez, Calif.; and parts of the plant and laboratory at Houston, Tex.

The plastics and resins division, under Martin Buck, will start out with only one main product line—Shell's Epon-brand epoxy resins. It will be sharing the Houston plant and laboratory facilities with the chemicals division. But this division appears to have top growth prospects. One indication: it's in line to take over whatever project is eventually chosen for Shell's nearly 200-acre plant site in New Jersey, across the Delaware River from Philadelphia.

The synthetic rubber division will operate the plant and research laboratory at Torrance, Calif., with John Cunningham as general manager. Sumner McAllister will head up the agricultural chemical division, which will handle the plant at Denver, Colo.

Price Boost Benefits

In sizing up the company-by-company impact of last week's federal and state decisions on natural gas pricing policies, chemical industry management can be sure of at least two effects:

- Both the U.S. Supreme Court's reversal of the "Memphis case" decision and the Texas Railroad Commission's approval of a 55% increase in wholesale gas rates in the Houston area will lead to generally higher costs for users of natural gas throughout the country.

- With natural gas producers and pipeline companies now confident of higher returns on sales of their product, there will be a new spurt in all phases of the natural gas industry—exploration, production, pipeline construction. It follows that there should then be greater availability of natural gas for fuel and feedstock use in many areas; and that there will be an enhanced market for various chemical products used in natural gas operations—e.g., safety odorant additives, pipe coatings, plastic pipe.

Aluminum Rivalry Quickens

More signs of mounting competition in aluminum appeared this week. Alcoa and Reynolds are vying for a big interest in British Aluminium, Ltd.; Kaiser is waging a court battle to regain alleged overcharges in the purchase of three smelters from the government; and a six-month price freeze—among U.S. and Canadian producers, at least—appears to be on.

The Reynolds-Alcoa battle stems from counterproposals made by the two companies to acquire a stock interest in British Aluminium, one of the largest aluminum producers in western Europe.

Earlier this year, the British firm's management accepted an Alcoa offer to buy all its unissued shares—which would give the U.S. firm a one-third interest. British newspapers attacked the deal, charging that Alcoa's shares, plus those already owned by other U.S. companies, would put control in the hands of U.S. industry. Alcoa, however, says it would elect only three of the 15 board members.

Five days before British Aluminium directors okayed the Alcoa proposal, Reynolds Metals and a British firm, Tube Investments Ltd., offered to set up a holding company—later to be absorbed into British Aluminium—that would be 49% owned by Reynolds, 51% by Tube Investments.

The holding company would buy up all outstanding British Aluminium shares through an exchange of Tube Investments' stock, plus cash supplied by Reynolds. Control of the British company would thus remain at home.

British Aluminium shareholders will be asked to vote on both plans. And the British Treasury also will have to review their choice; it will be strongly influenced by the stockholders' wishes.

In anticipation that British Aluminium shareholders will favor the Reynolds-Tube Investments proposal, Tube Investments Chairman Sir Ivan Stedeford said last week that he will call a special meeting of shareholders to authorize the shares needed for the transaction.

Terms call for one share of Tube Investments, plus \$11 in cash put up by Reynolds, in exchange for two shares of outstanding stock of British Aluminium.

Payment Demurred: In another corporate battle, Kaiser is suing the U.S. government in U.S. Court of Claims at Washington. Kaiser contends it was overcharged when it paid \$36 million in July '49 for three aluminum smelters owned by the General Services Administration. Selling price was to have been figured as 39.4% of the government's cost. But Kaiser says the terms weren't as favorable as those offered to Reynolds Metals, which was permitted to buy four smelters five months later for \$48.4 million. Kaiser is asking judgment for \$5.5 million in damages.

The government began defense testimony last week, with Jess Larson, former General Services Administra-

tor, testifying that he adopted a policy of selling the plants on the same basis to competing aluminum firms because of tight competition in the industry.

Larson said, however, that he personally figured Kaiser's bill at \$34.9 million during the negotiations.

Price Guarantees: Meanwhile, the aluminum price freeze seems certain to extend to at least mid-'59. Reynolds, Olin Mathieson, Revere, Anaconda and Aluminium, Ltd., last week went along with Alcoa and Kaiser, which earlier told customers they would guarantee prices on all aluminum products ordered and shipped before July 1—thus squelching rumors of an "imminent" price boost. The five other companies' price guarantees were expected, but not made official until last week (*CW Business Newsletter*, Dec. 13).



Off to Soaring Start on 'Big Board'

New York Stock Exchange President Keith Funston, Thiokol Chemical Corp. President Joseph Crosby and broker Joseph McHugh saw Thiokol stock get off to a soaring start on the "Big Board" last week. Crosby holds a model of the Army's Nike Hercules missile, for which Thiokol makes the rocket engine.

As trading began, a block of 100 Thiokol shares sold at \$97.50, up

\$2.25 from its previous closing on the American Exchange. Thiokol volume for the day totaled 16,700 shares.

The price of Thiokol stock has spurred ahead in spectacular fashion since 1948, when it was selling for \$4.60/share. Since then, holders have enjoyed—in addition to stock dividends—a two-for-one split and a price advance equivalent to more than 4,200%.

GAF Action Abroad

General Aniline & Film Corp. is completing plans for its first manufacturing plants in Europe, key items in an expanded program of European operations. Behind the move: GAF's desire to have plants within the European "Common Market" area, and a determination to share in what GAF is confident will be a booming era for the chemical industries.

Until the deal is closed, GAF won't say where its first plant will be built or what products it will make. Alfred Rimlinger, Antara Division export manager, does say that France—with its growing petrochemical industry—may get a GAF surfactant plant, although it won't be the first GAF unit to go up in Europe.

GAF already has license agreements with four European producers. In England, Fine Dyestuffs and Chemicals, Ltd. (Manchester), makes GAF-licensed optical brighteners and ultraviolet-light absorbers. Societe d'Application de Chemie (Paris) makes the same products in France. And in Sweden, two companies—Astra AB and Ferrosan AB—hold licenses to make GAF's iodophores (iodine-organic complexes useful as germicides).

And, impressed with European technical strides, GAF is "looking over" two patents (one French, one Italian), may take out licenses on them for production in the U.S.

Boom-Time Ahead: Rimlinger recently returned from a two-month tour of nine European countries. Purpose of the trip was largely to look over Euromart prospects. He also consulted Antara's customers.

He bases his boom-time prediction of European chemical growth on the likelihood that the proposed "Free-Trade Area" eventually will come into being, and on Europe's already "great stride" in raw-material development—especially petrochemicals—and stepped-up consumer demand. The new trade areas, he believes, would make possible "the free flow of materials, know-how and end-products," which would "inevitably stimulate rapid growth in the chemical industry."

For U.S. firms that want to sell in Europe, the "most obvious answer" is to set up wholly or partly owned manufacturing facilities in Europe.

COMPANIES

Biscayne-Gallowhur Chemical Corp. is the name of a newly formed company that merges the operations of Biscayne Chemical Laboratories, Inc. (Miami); Gallowhur Chemical Corp. (Ossining, N. Y.); Ajax Chemicals Inc. (Miami); and Gallowhur Chemicals Canada Ltd. (Montreal).

Gallowhur Chemical produces organic chemicals, fungicides and germicides; Biscayne makes and markets germicides and medicinals; Ajax distributes heavy chemicals in Florida, and Gallowhur Chemicals Canada Ltd. markets fungicides and slimicides.

President of the new firm is George Gallowhur, chief executive of Gallowhur Chemical Corp. Headquarters will be in New York.

Dynacolor Corp. (Rochester, N. Y.), major processor of Kodachrome film, will get into the chemical business by forming a new Synthetic Organic Chemical Division. The new division will produce synthesized organic chemicals on a custom basis, in quantities ranging from 10 grams to one ton. It will also manufacture organic couplers and developers for use in the company's processing stations.

Tantalum Defense Corp., subsidiary of Fansteel Metallurgical Corp. (Chicago), has been absorbed by the parent company. All assets, including the tantalum-columbium plant at Muskogee, Okla., and North Chicago facilities—which have been operated under lease by Fansteel—have been transferred to Fansteel by joint action of the two companies' boards of directors.

Drug Specialties Inc. (Clemmons, N. C.) has acquired more than 90% of the voting stock of Prane Laboratories Inc. (Nashville, Tenn.). Prane will be operated as a separate corporation for the time being, with sales offices remaining in Nashville. Accounting and shipping departments will be moved to Clemmons.

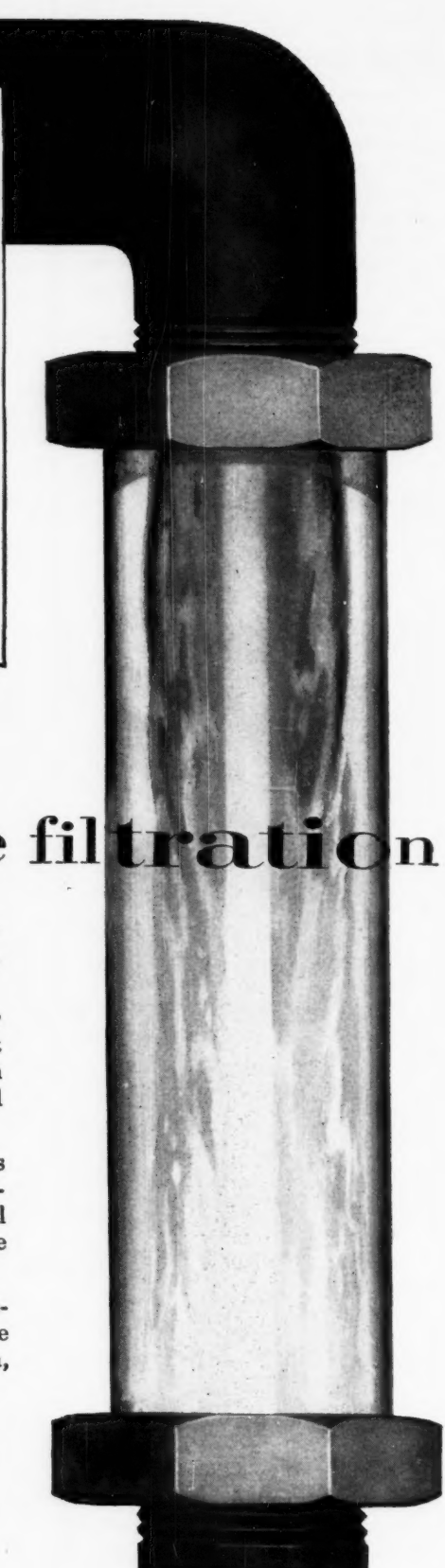
ACF Industries will close its nuclear products—Erco Division—plant in Buffalo, N. Y., as soon as existing contracts are completed. Reason for the move, says Works Manager Karl Kocher, is that "ACF has found it increasingly difficult to get new business to keep the Buffalo plant in operation." Approximately 400 workers will be affected. No definite date has been fixed for the closing.

EXPANSION

Glass: The French firm St. Gobain reportedly will build a \$40-million plate-glass plant somewhere in the Ohio Valley. The new unit would be operated by American Saint-Gobain Corp.—an affiliation of St. Gobain, Blue Ridge Glass Co. (Kingsport, Tenn.) and American Window Glass Co. (Pittsburgh). Saint Gobain, one of the world's largest glass manufacturers, accounts for about 15% of the plate glass and about 12% of sheet and rolled glass produced each year.

Coatings, Foams: Reynolds Chemical Corp., division of Stubnitz Green Corp. (Adrian, Mich.), has completed a new plant near Whitmore Lake, Mich., to produce plastisol coatings and urethane foams. The new unit is twice as large as facilities now operated in Ann Arbor and Ypsilanti, Mich.

Reynolds President James Hull reports that other new plants, which will nearly double the size of the company, are being planned.



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Celite Diatomite Filter Aids

Washington Newsletter

CHEMICAL WEEK

December 20, 1958

Washington will boost spending for rocket fuels next year—for development and production of both liquid and solid propellents. The fiscal '60 federal budget, now being completed, calls for more spending for both military and scientific programs.

The Advanced Research Projects Agency, which supports the special solid-propellant basic research program, research on a high-energy second-stage rocket, and other chemical-related programs, will increase its spending from \$200 million to at least \$300 million.

The National Aeronautics & Space Administration, the new civilian agency, expects its current \$225-million budget to rise to about \$400-million.

Military missile production spending will be up \$1 billion, to \$4.4 billion in fiscal '60. Research and development of missiles and fuels outlays will go up from \$500 million to around \$600 million.

•
Chemical industries are planning to increase spending for new plant and equipment in the first quarter of the new year. If carried out, the upturn will reverse a downtrend of a year's standing. The estimate comes in the regular survey of the Commerce Dept. and the Securities & Exchange Commission.

Chemical industries' outlay at a rate of \$1.22 billion this quarter is the lowest since a decline began a year ago. But the survey indicates their spending will rise to a \$1.34-billion annual rate in first-quarter '59.

Chemicals are the only industry in the nondurable-goods group expected to boost expansion spending in the first quarter. Industry as a whole expects to spend more, at an annual rate of \$30.51 billion, compared with \$29.93 billion in the current quarter.

Nonferrous metals also expect a rise in expansion expenditures—from a \$300-million rate this quarter to \$340 million next.

Two groups expect less spending: petroleum and coal products, from \$2.30 billion to \$2.28 billion; and paper and allied industries, from \$520 million to \$480 million.

But the indicated upturn for '59 will remain in doubt until the gap between anticipated and actual outlays is closed.

•
The antimerger record of Washington is growing. Last week came these new developments:

- Diamond Crystal Salt Co. was charged by the Federal Trade Commission with illegally acquiring Jefferson Island Salt Co. in '57.

Area domination figured in the complaint: the commission

Washington Newsletter

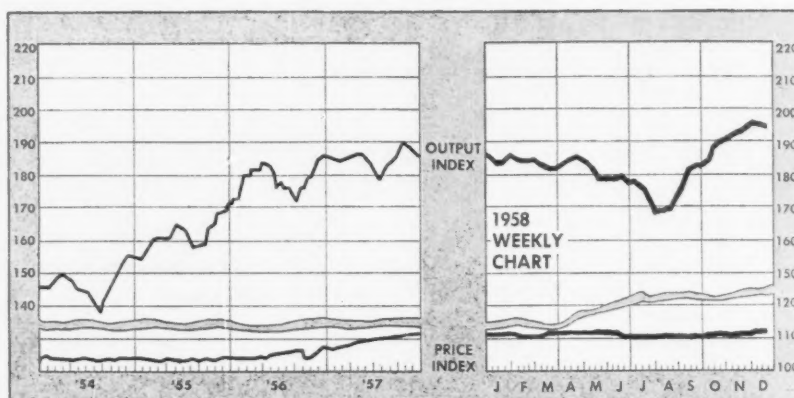
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charges that the merger eliminates competition between Diamond and Jefferson Island in a nine-state area in the South. The complaint points out that the heavy capital outlays required to enter the business, the inelasticity of demand for salt, and the high degree of concentration in the industry make it difficult for a new producer to enter the field.

- Brillo Manufacturing Co. did not violate the merger law, says a commission hearing examiner, when it acquired The Williams Co. in '55. The examiner reversed himself from an earlier ruling; he now says the merger will have no illegal effects on the industrial steel-wool market. Reason: competition is just as keen now as before the acquisition.

The government is again talking mandatory oil import controls.

A proposed new voluntary plan has been frowned on by the Justice Dept.—for antitrust implications. The current program expires Dec. 31 for most imports of oil. The Administration will act soon on some new approach. The Independent Petroleum Assn. of America is citing Dow Chemical Co.'s agreement to buy 27 million gal. of Russian benzene each year for the next two years as an example of the imports impact on U.S. industry.



Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	193.2	194.0	187.0
Chemical Week wholesale price index (1947=100)	112.0	112.6	111.2
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	47.70	46.99	40.05
Steel ingot (thousand tons)	2,015	1,985	1,770
Electric power (million kilowatt-hours)	13,017	12,274	12,315
Crude oil and condensate (daily av., thousand bbls.)	7,067	6,983	6,850

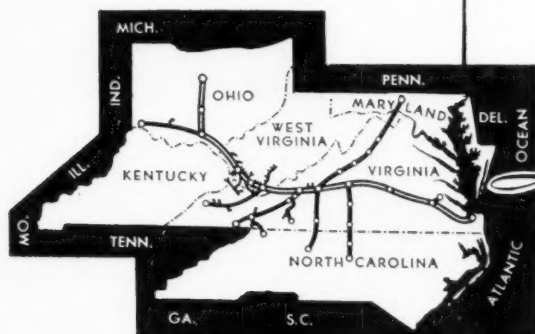
MONTHLY

	Latest Month	Preceding Month	Year Ago
Employment (thousands)			
All manufacturing	11,778	11,943	12,896
Nondurable goods	5,298	5,359	5,483
Chemicals and allied products	518.4	512.4	542.0
Paper and allied products	444.1	446.4	460.5
Rubber products	192.1	188.0	209.8
Petroleum and coal products	154.1	157.6	167.2

Speaking of MARKETS.....

RESOURCES OF THE LAND OF PLENTY

RAW MATERIALS: World's finest all-purpose Bituminous Coal . . . multi-million-ton deposits of Dolomitic limestone and Calcium Carbonate limestone (over 97.7% pure), some in mineable thicknesses of over 100 feet . . . manganese, silica, clays, brines and varied other mineral, forest and farm materials. **POWER:** Total installed generating capacity of over 21 million kilowatts — over 1/6 the U. S. total — and more on the way. Low rates. **WATER:** 6000 sq. miles of inland, permanent surface water, including the Ohio, James, Potomac, New, Scioto and Roanoke, rivers large enough to be included among the nation's 51 principal streams; also wells, lakes, tidewater. **MANPOWER:** Civilian work force of over 8,151,000; 2,650,000 in manufacturing, 1,485,000 in wholesaling and retailing . . . adaptable, home-rooted people with proven high production records; good supply of young workers constantly coming into the market. **TRANSPORTATION:** Dependable rail service by Norfolk and Western, one of the world's most modern, most efficient railroads. The N&W has more freight cars per mile of track than any other Class I railroad, and since World War II has spent or authorized \$456 million in improvements and additions, \$70.1 million of this spent in 1957. **SEAPORT:** Factories and warehouses in *The Land of Plenty* have access to world markets and sources via the big port of Norfolk on Hampton Roads, one of the best-equipped in the nation. **INDUSTRIAL GROWTH:** In 1953-57, 306 new plants on the Norfolk and Western were established (an average of 1 every 6 days). In the same period existing industry invested \$562 million in expansion and improvements.



of the **200** counties
leading the nation
in retail sales,

90 are in the
Land of Plenty and
its bordering
states . . .

In 1957, total retail sales in *The Land of Plenty* and the states directly bordering it amounted to \$82,158,497,000 — 41% of the \$200,171,999,000 U. S. total.*

This is a market of 74,066,000 people — 43.1% of the nation's population — representing 21,115,000 households. Per capita effective buying income† is high. In fact, of the 200 counties leading the nation in per capita effective buying income, 90 are in *The Land of Plenty* and its bordering states. In these counties, this buying income is \$1870 per person — higher than the national average by \$136.

If you want to reach this big market with a new plant or warehouse, let the Norfolk and Western's plant location specialists give you specific data about good sites. There's no obligation, and your inquiry will be handled promptly and confidentially.

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Industrial and Agricultural Dept.
Drawer CW-807 (Phone Diamond 4-1451, Ext. 474)
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Roanoke, Virginia

* All figures from *Sales Management's 1957 Survey of Buying Power and Statistical Abstract of the United States.*

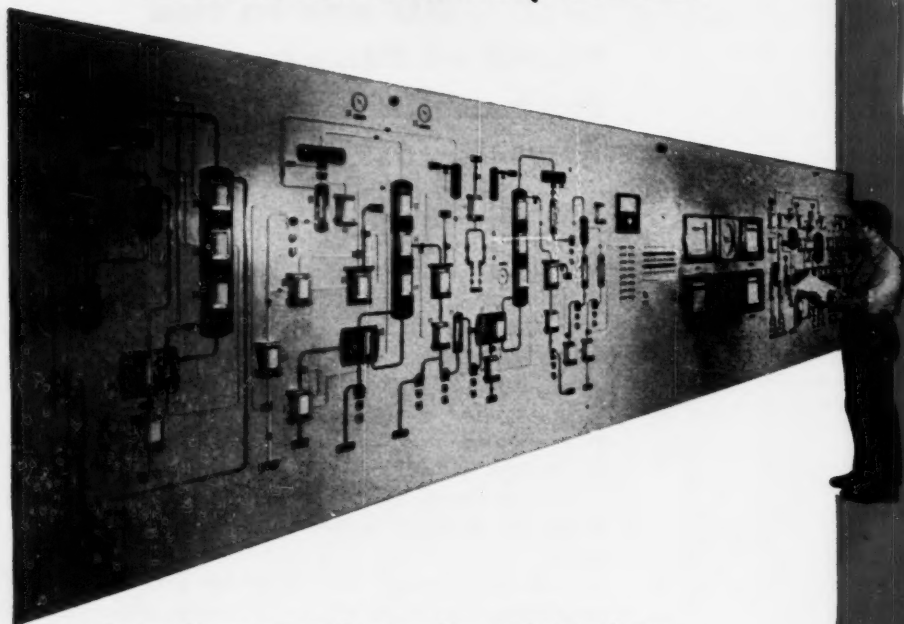
† Disposable income available for spending.

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Succinic Acid
Dodecenylsuccinic
Anhydride
Meta-phenylenediamine

SPECIALTIES



CW PHOTO—LIONEL CRAWFORD

All signs pointed to a good year ahead at specialties makers' meeting in New York last week.

Convening Specialty Makers Optimistic

Arriving the same day as the season's first snowfall, over 1,000 representatives of chemical specialty makers and their suppliers scraped their shoes on the doormat of New York's Commodore Hotel, then plunged into business at last week's 45th meeting of the Chemical Specialties Manufacturers Assn.

This was one of the gaudiest meetings in recent years and there was a strong note of optimism in the air. Black derbies and blazer jackets gave the meeting a bright note. And an aerosol supermarket—at which samples of the latest items in pressure packages were distributed—helped liven things. Also contributing to the liveliness were 71 hospitality suites, always a feature of CSMA meetings.

Because they are located in the Atlantic states, many

of the chemical specialty makers were able to send whole squads of their younger sales personnel to the meeting. And many of these used hard-sell tactics. Consequently, this session had a much more frantic air than the last two meetings at Cincinnati and Hollywood Beach, Fla.

Labeling Theme: Leona Baumgartner, New York City health commissioner, hit hard at the theme of the meeting, labeling requirements, by urging chemical specialty makers to work closely with health departments to protect the public from hazardous or mislabeled products. According to Mrs. Baumgartner, increased use of chemicals by housewives has presented problems as well as advantages. It has produced a need for establishing poison-control centers to assist physi-

SPECIALTIES

cians in handling cases of mis-used household chemicals.

"In New York City alone," she said, "8,000 cases of death and illness involving drugs and chemicals were reported to the city's Health Dept. Poison Control Center last year." She went on to say about 2,000 cases involved household products; fortunately, she emphasized, most of these cases weren't serious.

Dr. Arnold Lada, chief of technical research, Onyx Oil and Chemical Co. (Jersey City, N.J.) presented some optimistic predictions of the growing market for bactericides used in treating water for oil recovery systems. Lada said that "about 180 million bbls. of crude oil—6.5% of the total U.S. production—were recovered in '57 by waterflooding." The petroleum industry used at least 6 million lbs. of bactericides last year to clean up the nearly 3 billion bbls. of water used in this process.

"By '80," Lada estimated, "waterflooding will be used with 750 million bbls. per year—or 25% of total crude production."

Leonard C. Rowe, General Motors Corp., warned antifreeze and coolant makers to re-evaluate their products for use in aluminum auto engines. Rowe said "the rapid boosts in horsepower and the demand for economy have placed new premiums on automotive body weight." One area that is getting a critical look is the engine and its components. This might, eventually, lead to the use of light metals that will directly involve the engine cooling system.

Chlorine Gauge: A way to find content of inorganic (ionic) chlorine in bleached shellac was described by Orlando Tweet and others of S. C. Johnson & Son, Inc. (Racine, Wis.). The method involves a liquid-liquid extraction of chloride from a butanol solution of the shellac, and the potentiometric titration of chloride in the aqueous extract. (Results obtained by the Johnson method for total chlorine are slightly lower than those obtained by the peroxide bomb procedure, but the former method is faster and doesn't require special equipment.)

Irwin Y. Straus, Dura Commodities Corp. (New York), described a new, simplified technique for the manufacture of self-polishing wax. Called the "Direct Wax Saponification Method,"

CSMA's Survey of Floor Products Sales

Except retail sales of household products.

		Total Sales 1957	Percent Change from '56
WAX EMULSIONS (Self-polishing)			
Less than 16% nonvolatile	(Gal.)	7,932,776	+ 2.85%
16% and greater nonvolatile	(Gal.)	2,150,202	+ 3.67
RESIN FINISHES			
Aqueous	(Gal.)	2,179,066	+51.78
Alcohol (not including shellac varnishes)	(Gal.)	119,677	— 8.77
FLOOR SEALERS AND GYM FINISHES			
Type: nonaqueous, oleo- resinous, petroleum solvent	(Gal.)	2,247,077	— 3.40
Type: lacquer and others	(Gal.)	176,905	+ 6.17
SOLVENT-TYPE WAXES			
Liquid waxes	(Gal.)	711,145	+ 9.71
Paste waxes	(Lbs.)	2,155,483	— 3.42
PASTE WAX EMULSIONS	(Lbs.)	642,565	+12.03
DUST MOP TREATMENT (not including floor oils)	(Gal.)	1,225,041	+16.44
SWEEPING COMPOUNDS	(Lbs.)	28,217,418	+10.43

the procedure is said to permit reduction of total soap content to low levels without sacrificing particle size, and to provide economical use of alkalis to produce the emulsifying soap. It's also designed to eliminate the danger of postprocess reactions, such as gelling and thickening.

Single Survey: Only one survey was presented at this meeting. The CSMA's poll of some 101 manufacturers of floor finishes (see box) indicated that aqueous resin finishes are making big strides in capturing wax markets. The study—covering only industrial sales—showed that aqueous resin finish shipments of 2.2 million gal. last year represented a gain of 52% over '56. Another big gainer was dust mop treatments. These (not including floor oils) amounted to 1.2 million gal., a 16% rise over '56.

Donald M. King, head of Masury-Young Co. (Boston), was elected president of the CSMA. George W. Fiero of Esso Standard Oil Co. (New York) was elected first vice-president and Charles E. Beach of John Stalford and Sons (Baltimore), second vice-

president. P. C. Reilly, Reilly Tar and Chemical (Indianapolis), and H. W. Hamilton were re-elected treasurer and secretary, respectively.

Next meeting of the CSMA will be the 45th midyear meeting at the Hotel Drake in Chicago next May.

PRODUCTS

Brilliant Idea: The familiar Christmas tree icicle has gone plastic. Ben-Mont Papers, Inc. (Bennington, Vermont) is turning out icicles of saran film metallized with aluminum.

Dutch Treatment: N. V. Chemische Fabrieken Aagrunol (Groningen, northern Netherlands) is offering a new fungicide for combating fruit diseases. The compound (cetylpyridinium dimethyldithiocarbamate) is said to kill scab fungi after the spores have germinated and the germs cells have penetrated into the leaf. According to Chemische Fabrieken, its dicarbamate compound can be used on all types of fruits up to 48 hours after the onset of infestation.

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	CDB-59	CDB-60	CDB-70	CDB-85
Formula	$\text{Cl}_2\text{K}(\text{NCO})_3$	$\text{Cl}_2\text{Na}(\text{NCO})_3$	$\text{Cl}_2\text{H}(\text{NCO})_3$	$(\text{ClNCO})_3$
Molecular weight	236.06	219.96	197.97	232.47
Average available Chlorine, %	57.0	59.7	69.9	88.5
Melting point °C	230*	230-250*	225	225-230
pH (saturated solution)	7.3	6.1	2.6	2.9
Solubility (g/100 g. soln.)				
H ₂ O at 26.8°C	10.3	24.8	2.57	1.2
Color	white	white	white	white
Physical form	fine powder	fine powder	fine powder	fine powder

*decomposes without melting

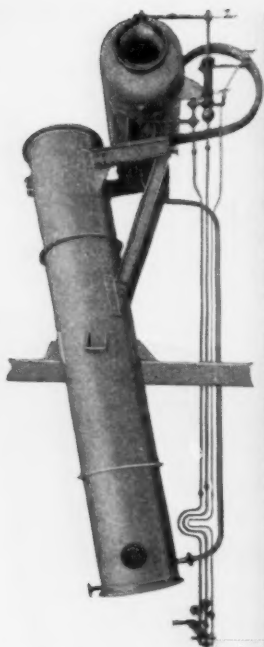


Putting Ideas to Work

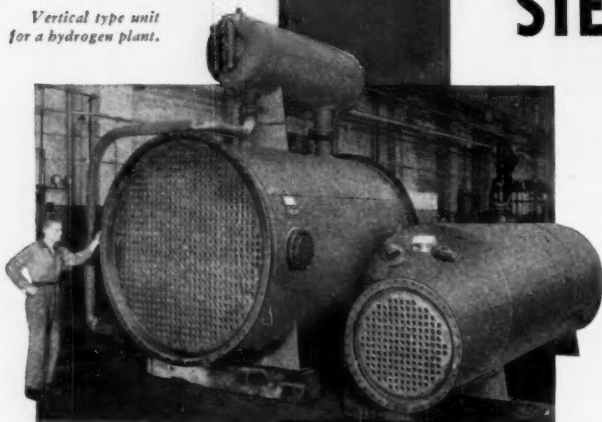
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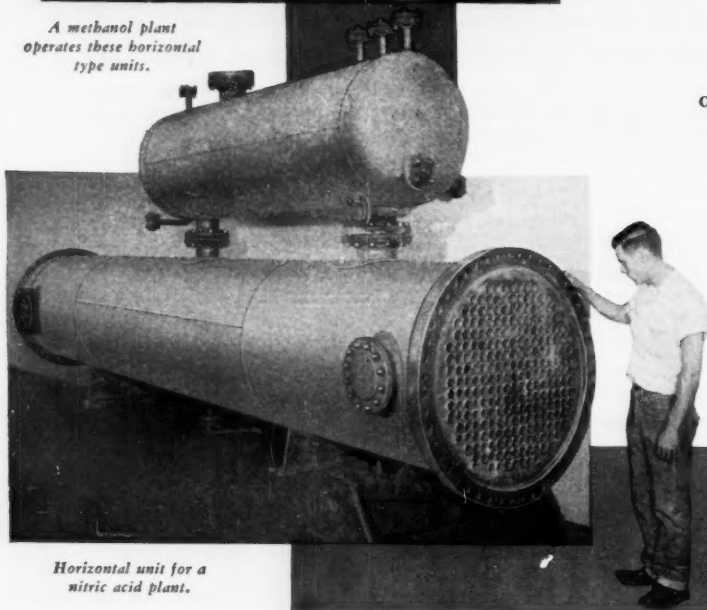
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RESEARCH



Advanced aircraft like this Navy A3J 'Vigilante' are forcing the campaign for better lubes.

Upping Synthetic Lubricant Staying Power

Silicones are putting in a stronger bid for aircraft lubricating jobs this week, thanks to Air Force-sponsored research at Stanford Research Institute (Menlo Park, Calif.). Results of this work are three additives—1,2-benzanthracene; pyrene; acenaphthene—that inhibit the oxidative gelation (breakdown resulting in a jelly-like consistency) of chlorinated silicones at 500-700 F.

An SRI team,* working with General Electric's F-50 (methyl chlorophenyl silicone) finds that the new additives will stave off gelation up to

200 hours. Normal gelling time is 10 hours.

Oxidation is the natural foe of lubricants currently required in jet aircraft engines operating at 250 F bulk (average) oil temperatures. Only synthetics of the diester type (e.g., diethyl sebacate), combined with suitable additives, are accepted by the Air Force (under specification Mil-L-7808) for this use. These are now made and supplied by oil companies for use in military and commercial aircraft.

Advanced engines operate at 400 F bulk oil temperatures; consequently, even better lubricants will be required in the near future. Now chemical companies, including silicone mak-

ers Dow Corning, General Electric and Union Carbide Chemical's Silicone Division, hope to enter the synthetic lubricant field as direct suppliers. Hercules Powder (with pentaerythritol-based esters) and Monsanto (which has been developing polyphenol ether lubricants) are examples of other CPI firms eagerly eyeing this new market.

Chances are that ester-type lubes will be the first to fill these stiffer requirements, which are covered in target specification Mil-L-9236A (USAF), but silicone makers feel that they also have a good chance of coming up with a good lube. Their problems, though, are plentiful.

*Senior organic chemist Robert Silverstein, chemist Edward Acton, and technician Kathleen Moran.

General Electric has tested the SRI additives and found them no more effective than its regular F-50 antioxidant additive, iron octoate, when substituted for the latter. In combination with iron octoate, however, the new additives greatly enhance F-50's oxidation resistance. Nor will the SRI additives combat oxidation of chlorine-free silicones, silanes or mineral oil.

Other hopeful antioxidants for silicone lubes are also being sought by the Materials Laboratory, USAF Wright Air Development Center (Dayton, O.), as well as by lubricant makers and by independent research laboratories working under WADC sponsorship. Shell Oil Co. (Martinez, Calif.) reportedly has turned up an indanthrene dye type of silicone filler that also serves as an antioxidant. Normally, fillers decrease oxidation resistance. And aromatic amines (e.g., acridine) have shown good antioxidant properties not only in silicones but also in other types of lubricants (e.g., diesters, phosphates, silicates) in recent tests conducted at the University of Virginia.

Not everybody interested in silicone lubes admits that antioxidants are the major answer. Dow Corning's new product head, Chester Currie, tells *CW* that an additive to improve lubricating ability of silicones on sliding surfaces is particularly needed.

Nor are silicones likely to appropriate all synthetic lube duties for themselves. At WADC's materials lab, Harold Adams is looking at hydrocarbons as well as esters and silicones, and concludes that there are possibilities in all three of these major types of lubes. While silicones have turned in a good progress record, hydrocarbons aren't being ruled out. WADC is looking at hydrogenated stocks and conventionally refined materials that have been "cleaned up" of sulfur and nitrogen-containing complexes. Formulated with suitable additives (e.g., phenyl α -naphthylamine), these lubes perform well at —40 to 700 F. Mineral oil has an edge on certain ester types in one respect, Adams believes. While mineral oil may have a higher rate of oxidative degradation at, say, 300 F, ester lubes at 400 F have this advantage for only a short period of time, then abruptly oxidize. Currently, the hydrocarbon lubes under investigation vary in de-

gree of hydrogenation, although WADC is getting more interested in highly aromatic stocks.

In one series of 350 F engine tests at WADC, however, mineral oil, plus conventional additives, didn't fare well. After 25 hours, the test was discontinued because of excessive oil consumption. Certain high-molecular-weight synthetic esters, in comparison, lasted 100 hours, the duration of the test. Not all synthetics made the grade, either. A high-molecular-weight sebacate with a nonconventional oxidation-corrosion additive was thrown out after 70 hours because of excessive viscosity increase.

For the immediate future, WADC sees continuing use of ester lubes—which were the first high-temperature lubes to meet armed forces requirements (*CW*, Nov. 27, '54, p. 74). With the esters, however, Adams says, "We're really beating the bushes for antioxidants." So far, the best additives are combinations such as phenyl α -naphthylamine or phenylthiazine (which ward off oxidation at lower temperatures) and high-temperature (400-500 F) antioxidants such as the silica analog of phenylthiazine. "We have several of this type that appear efficient above 500 F," he states.

The big problem in ester lube research, according to Adams, is finding better lubricants bases, rather than additives. The investigative procedure goes like this: First a variety of esters are examined—such as esters of trimethylolpropane or pentaerythritol—then a plausible additive system is worked out. A pioneer in the field—di-iso-octyl sebacate—is still being used under specification MIL-L-7808, the first high-temperature lube criterion.

Considering the present 2½-3-million-gal./year synthetic aircraft lubricant market at costs ranging from \$3.80/gal. for the Air Force (which takes about half of the lube output) to \$8-10 for commercial lubes (distribution adds to the cost), the market for additives is substantial. Moreover, until two additives become competitive on a performance basis, cost isn't likely to be a factor. Of course, not only antioxidants but also anti-foaming, anticorrosion and other additives will be required. And the market is expected to double in the next five years as civilian jet transports stud the skies, lending further impetus to additive research.

Live Insecticide Debut

Last week, the Food & Drug Administration granted a "temporary exemption from a tolerance" (for food and forage crops) to Bioferm Corp. (Wasco, Calif.) for its Thuricide pest control agent. It's reportedly the first commercially produced biological insecticide. Simultaneously, USDA issued an "experimental permit" for shipment and large-scale testing.

Thuricide is a "live" insecticide, according to Bioferm, its active principle being the live spores of the microorganism *Bacillus thuringiensis* (*CW Technology Newsletters*, Oct. 11, Nov. 15). It kills by "diseasing" insects that eat it. Shortly after an insect (e.g., an alfalfa caterpillar) eats enough treated leaf to ingest 40-80,000 live spores, it sickens, drops from the plant and dies. The specific action of the disease is speculative, centers on a double-ended crystal associated with the spore, which is thought to weaken the insects' gut wall, allowing the spores to pass into the body cavity.

Advantages: J. M. Sudarsky, vice-president of Bioferm, voices enthusiasm about Thuricide's advantages, which include harmlessness to man and most other animals, fish and plants; no toxic residue; selective insect kill (bees, insect parasites and predators are unaffected); insects do not develop immunity to its killing action; and it's easily applied.

Thuricide has been used against leaf-eating insects, with the aim of controlling pests such as the imported cabbage worm, cabbage looper, diamondback moth larvae and alfalfa caterpillar. Dosage of 1-3 lbs./acre on most leaf-type crops has proved effective against these pests, according to Sudarsky.

Cost Question: Cost questions are not yet resolved. No price has been set on Thuricide during the experimental phase of test work, according to Robert Fisher, director of manufacturing and development at Bioferm. However, he adds that "most of the dosage levels so far recommended are in the range that will allow Thuricide to compete with insecticides similarly used."

Whatever the cost, this newly developed method of limiting damage caused by insects will get careful scrutiny by U.S. insecticide interests this coming spring.



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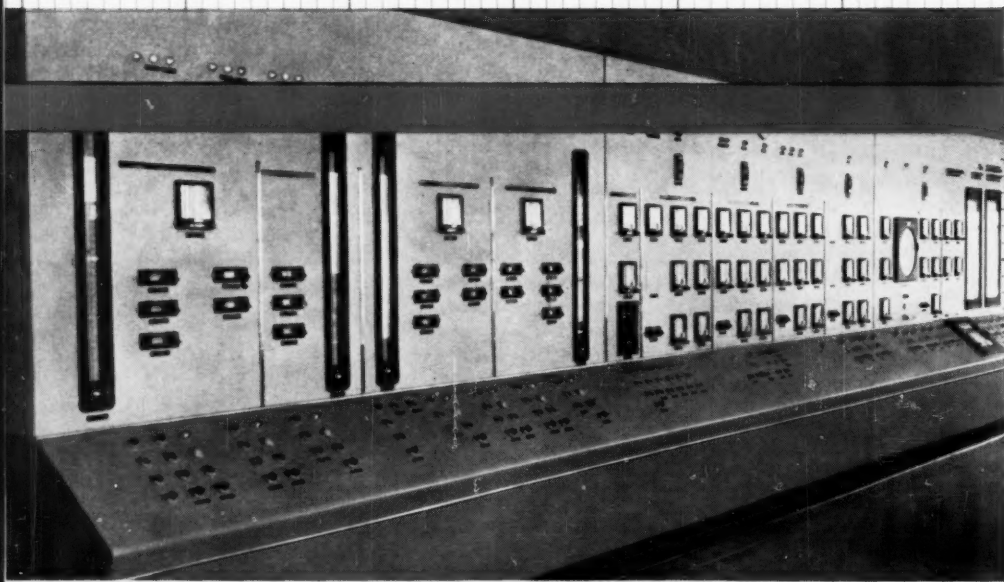
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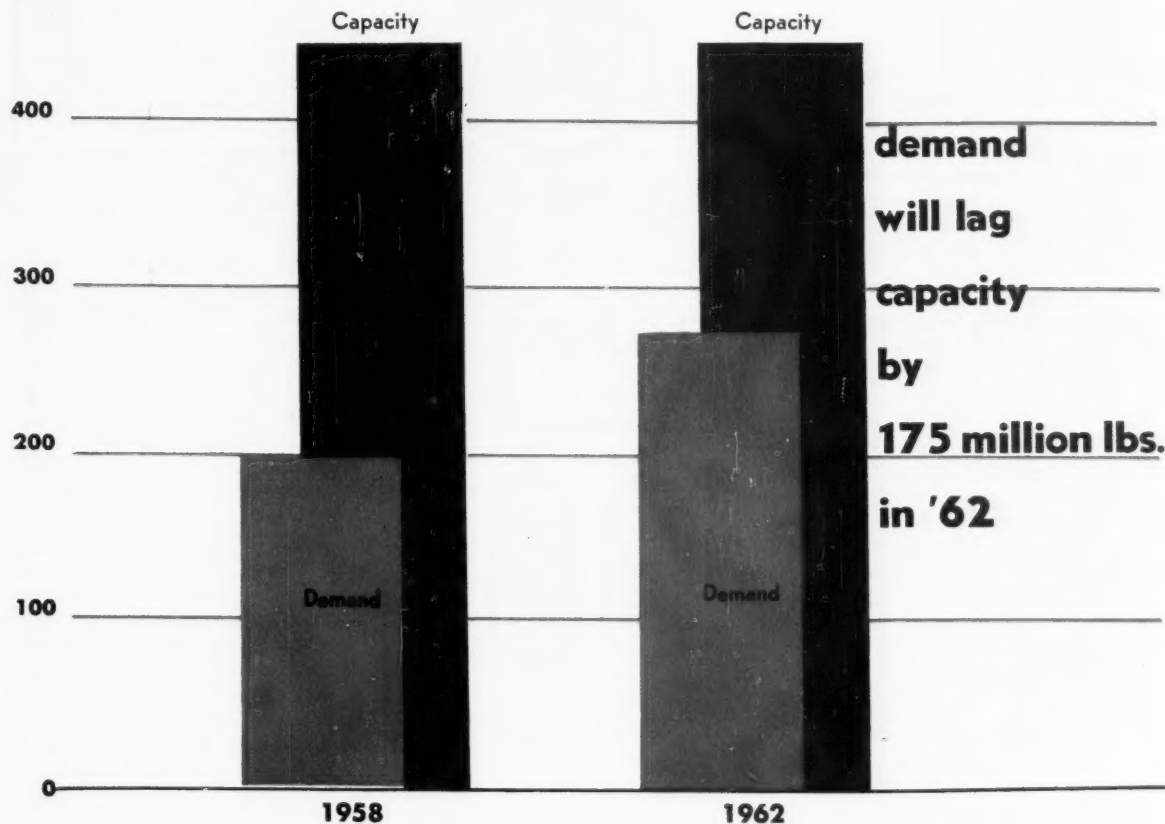
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MARKETS

Million
pounds
500

Fluorinated hydrocarbons



New Capacity Spurs Fluorocarbon Fracas

A rough-and-tumble scramble for U.S. fluorocarbon markets is on. Last week's entry of Union Carbide as fourth producer (*CW Market Newsletter*, Nov. 22) boosts total U.S. fluorocarbon capacity to well over 400 million lbs./year. In sharp contrast, current demand is about 200 million lbs./year. Best forecasts indicate 275 million lbs. by '62.

The producer lineup puts Du Pont in the lead with some 280 million lbs./year of fluorocarbon capacity. General Chemical's capacity is an estimated 75 million lbs./year, Pennsalt's is in the 20-50-million-lbs./year range (trade observers disagree on Pennsalt's capacity), and Union Carbide's new installation has 50-million-lbs./year capacity.

Urethane Foam Bounce: Hottest behind-the-scenes activity in fluorocarbon promotion is development of the urethane foam market (*CW Market Newsletter*, Nov. 15). Consensus is that fluorocarbons (especially Type 11) will soon largely replace conventional carbon dioxide as foaming agent in preparation of rigid foams. (Carbon dioxide is generated, during foam preparation, by use of water and excess isocyanate.)

Fluorocarbon-foamed polyurethanes have demonstrably superior insulating properties, which permit manufacture of less-bulky refrigerating equipment. Now well out of the development stage, fluorocarbon-foamed urethanes are already used in production lines by some major

appliance manufacturers. Other manufacturers will soon follow suit.

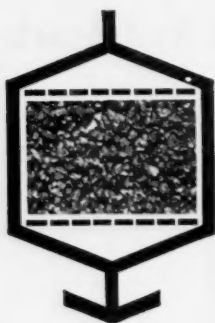
Fluorocarbon producers, however, aren't publicizing the new and promising outlet. But admission of bright prospects in the area comes from an industry spokesman who says, "Sure, it looks good—very good. But we are trying to be very quiet about it."

Propellent Push: Propellents and refrigerants are, of course, main props for fluorinated hydrocarbon markets; each use accounts for approximately 45% of total demand.

By '62, according to General Chemical's fluorocarbon experts, demand for nonfood aerosol units will likely have increased to well over 700 million units/year, compared with 390 million units sold in '57 and

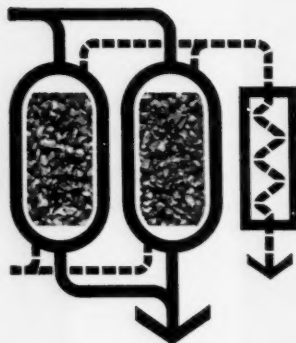
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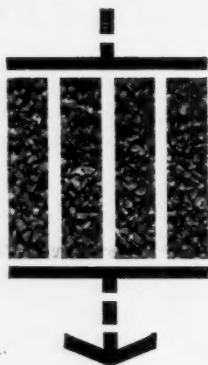
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MARKETS

Estimated Nonfood Aerosol Demand

	(million units)
1957	390
1958	420
1959	500
1960	580
1961	650
1962	720

Source: General Chemical Division,
Genetron Dept.

some 140 million units in '53. Hair sprays account for nearly 25% of this current total aerosol market; room deodorants, shave lathers, insecticides together take another 45%. Miscellaneous products—e.g., coatings, perfumes, glass cleaners—account for the remaining 30%.

Public acceptance of aerosol products is no longer in doubt, and demand for them will continue to grow. But market followers hesitate to peg major future growth of fluorocarbon demand to the aerosol outlet, for these reasons:

- Competitive propellents: nitrous oxide, carbon dioxide, butane, methylene chloride, nitrogen.
- Trend toward use of less propellant per unit whenever possible.

Air Conditioners Turn Down: Hard hit by tightened consumer purse strings and a comparatively cool summer, sales of residential air conditioners this year dropped off 10%, to an estimated 1.5 million units. It's the second consecutive setback for the industry; sales in '57 were an estimated 1.6 million units—a big 20% below the record 1.8 million units sold in '56. Decline of unit sales means, of course, cutbacks in fluorocarbon consumption.

And there's another demand-leveling factor. Until recently, makers of refrigerants could attribute a substantial part of their sales to the big replacement market. But new units now have refrigerant hermetically sealed into the compressors, to curtail leakage—hence, replacement is required less frequently.

Nonetheless, there's little doubt that propellents and refrigerants will both continue to be prime users of fluorocarbons for many years; and the prospects of increased sales in '59

are good because of expected pick-up of general economic activity. It's clear, however, that these markets won't grow fast enough to make full use of U.S. plants' current fluorocarbon capacity.

Other Outlets: Fluorocarbon plastics—notably Du Pont's Teflon—are becoming increasingly important in such applications as manufacture of insulators for electric wire, cables, and in fabrication of valve gaskets and packings.

Du Pont won't say how much Teflon is now being produced, but demand for fluorocarbon plastics is reportedly growing at a fast clip. One independent trade estimate—neither confirmed nor denied by Du Pont—puts '57 Teflon production at some 6 million lbs.

Still debated in marketing circles is likelihood that fluorocarbon propellants will become important in food aerosol units. Du Pont, for one, has announced a fluorohydrocarbon suit-

U.S. Fluorinated Hydrocarbon Capacity in 1962

(million pounds est.)

Du Pont	280
General Chemical	70-80
Union Carbide	50
Pennsalt	25-50

able for food use, but government sanction for such use is yet to be obtained. Another handicap in development of this potential market is expense of the propellant, compared with value of foods that could be dispensed with the gas.

The U.S. fluorocarbon industry obviously has many profit possibilities—but there's still doubt about how soon some of them will break through, how big they will grow when they are commercialized.

Nevertheless, fluorocarbons definitely comprise a growth market; and among producers, optimism abounds. But it's an optimism tempered by the realization that now—and for a long time to come—the fluorocarbon marketplace will be a lively proving ground for each company's sales development ingenuity.



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1860-1917

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Behind the Dots: Worldwide Expansion Move

The far-flung operations of Reichhold Chemicals, Inc., together with the locations of current major expansion projects, are shown at a glance in the map above. The star signifies the firm's international headquarters at White Plains, N.Y.;

the dots and circles represent 14 domestic plants (including 6 expansion projects), one domestic plant under construction, and 23 foreign plants, with 5 more planned, under construction or just completed. Reichhold's overseas plants are

Links in Global Engineering Chain

Reichhold Chemicals, Inc., forged a new link in its globe-girdling chain of chemical plants early this month with the startup of a new facility in Lisbon, Portugal. This latest addition, —together with several other projects still under construction (see map, left) —emphasizes how a highly flexible engineering organization has paid off for Reichhold.

The worldwide scope of RCI's processing activities poses problems in two vital engineering functions—communications and manpower planning. For the first, the company's solution is a decentralized setup, with a small central engineering department at its White Plains, N.Y., headquarters serving as a clearing house for self-sufficient engineering groups at each of the plants.

The work is coordinated by Executive Vice-President Stefan Baum and Vice-President for Manufacturing Charles Windsor. This team receives copies of all plant managers' reports, keeps up-to-date on all engineering data and problems at each of the company's processing plants.

The rapidly increasing work load has kept RCI engineers hopping. In addition to the new plant in Lisbon, others are now under construction in Houston, Hong Kong and Niort (France), while two more are planned for undisclosed locations in South America. And the new plants will be joined by major new facilities under construction at existing plants in Kansas City, Kan.; Tacoma, Wash.; Elizabeth, N.J.; Jacksonville, Fla.; Detroit, Mich.; and Ballardvale, Mass.

RCI's answer to the manpower problem: increased utilization of outside engineering firms. It prefers to do its own engineering when possible, but recognizes the need for help in some instances. Example: Badger Manufacturing Co. (Cambridge, Mass.) is handling Reichhold's biggest (in terms of cost) turnkey contract as part of the new, \$5-million phthalic anhydride plant going up at Elizabeth.

Reichhold is handling all of the off-site facilities involved.

Flexible Communications: Keynote of all RCI's engineering communications is flexibility, says Baum. Thus, any engineer with a problem at one plant may write directly to an acknowledged expert at another plant. Baum and Windsor review copies of this correspondence, note when similar problems arise in several different plants. Then they pass along the answers to all the engineers concerned with related problems.

Interplant communications is speeded by a Teletype system, but multi-terminal, cross-country conference phone calls are preferred for working out knotty problems.

RCI's most powerful engineering communications technique is the task-force conference. These conferences last from two days to a week, bring together all the engineers in the company who have a common process or design problem. The meetings are not held on a regular basis, are scheduled as the need arises.

Cause for Conference: RCI's next conference will be unusual in one respect — it is to be the company's first general engineering conference. In early spring of '59, the top engineers from each of the 14 domestic plants will meet for two to four days at one of the company's East Coast facilities.

They won't be concerned with just one specific problem, says Baum. The host plant will ask all others to suggest topics that they would like discussed by conferees.

On the other hand, the need for the most recent conference was more specific. Phthalic anhydride was the central topic at Hamburg, Germany, last March, when engineers from RCI phthalic plants in four countries met to compare notes. And two years ago, phthalic was also the topic of a meeting at Detroit. At that time, the company was in the early stages of a long-range shift to the use of cyclic condensers of a particular design originated at the Detroit plant. Result: the Paris plant, conversion of which was finished just this summer, con-

at Full Steam

either owned by subsidiaries of the parent company or are joint ventures between Reichhold and various associated foreign companies. In all, over 20 corporate names are involved in the ownership of the foreign plants and properties.



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ENGINEERING

tains features of the Hamburg and Detroit plants.

But a conference can't solve all the problems. The importance of community engineering groups was experienced at the Liverpool, England, plant when new condensers were installed. Although the design had met no opposition in other cities, Liverpool officials required modifications before they would approve the change.

Common Process: A conference in which the process—rather than the product—was the common element brought together engineers from five plants. The processes all involved hot baths and hot metallic catalysts. Products made by the different yet similar processes were formaldehyde (Seattle and Tacoma), maleic anhydride (Elizabeth) and phthalic anhydride (Detroit and Azusa, Calif.).

Two formaldehyde parleys were held in recent years. The first, at Tuscaloosa, Ala., near the end of '56, brought together engineers from the company's three plants using the silver catalyst process. The group reconvened at Tuscaloosa a year later to further evaluate their process, set about designing a new plant—the Hampton, S.C., plant, completed this past summer. RCI takes pride in the Hampton facility, which arose in a cornfield in just six and one-half months—with no outside engineering help.

Using Contract Engineering: The Hampton plant is a prime example of RCI's desire to keep engineering work within the company, if possible. The firm's engineers like doing their own work and do everything they can to handle new projects, according to Baum. He points out, however, that doubling the company's annual expansion rate — from \$3.5 million to \$7 million — has made it impossible to do all the work "inside the shop."

The type of engineering help that RCI has contracted for ranges from local draftsmen to sizable contracts with several well-known engineering firms. But even when contracting for a large turnkey job, RCI still gets in its engineering licks. For example, Badger has been asked to use the RCI-type cyclic condenser in its design for the new Elizabeth plant.

As Baum puts it, "Maybe we don't have a large central engineering department, but we can call one together on any project at any time."

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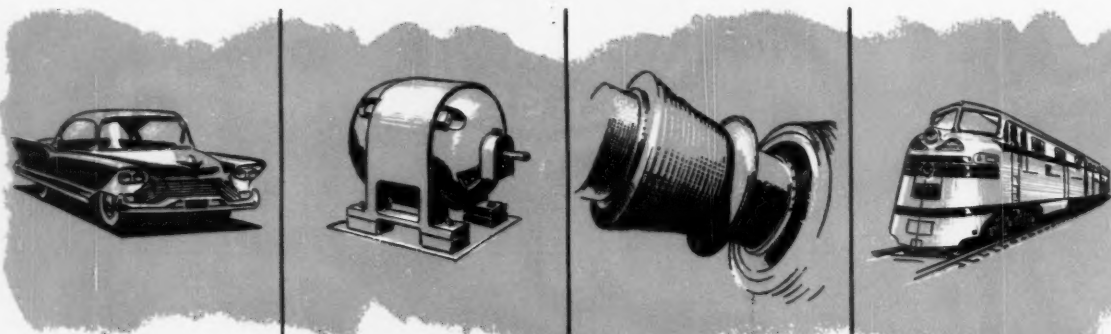
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(Source: The Petroleum Engineer, March, 1956, article by C. J. Boner, "Addition Agents for Lubricants.")



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Technology Newsletter

CHEMICAL WEEK
December 20, 1958

High-speed physical-test methods for plastics and lightweight alloys are gaining wide attention from chemical companies. Evidence: strong CPI representation last week at a Boston symposium on the subject. Sponsor: Plas-Tech Equipment Corp. (Waltham, Mass.). The speakers, including Monsanto's Stephen Strella and Thiokol's H. D. Brettschneider, stressed this point: many plastics and alloys are highly sensitive to the rate at which they are loaded; conventional tension, compression and shear testing isn't sufficient to accurately predict how materials will perform in use. For example, a load applied to a polymeric material at a rate of 20 in./minute (conventional) will give entirely different results than will the same load applied at a rate of 6,000 in./minute (high-speed).

Although ASTM has held several symposiums on the speed of testing, last week's was devoted strictly to the high-speed field, included discussions on plastics, composite solid rocket fuels, textiles, metals (including titanium).

•
AEC's supercaution on reactor safety shows up in its decision last week to license Power Reactor Development Co. to construct a 100,000-kilowatt fast-breeder reactor at Lagoona Beach, Mich. AEC overrode union objections, but construction will proceed under tight commission supervision, and AEC warns that an operating license will be issued later only if it is completely satisfied the facility is safe.

•
Chemical firms want in on AEC's fuel-cycle development plan. They are among the 39 companies that submitted 107 proposals in response to the commission's October invitation to participate in the research and development program. Firms chosen will be provided with such AEC assistance as hot-cell facilities and irradiation space in test reactors.

•
Licensing agreements on electrodialysis, completed last week by Permutit Co., Ltd. (London) and Ionics, Inc. (Cambridge, Mass.), solidify the latter's international patent position in this water desalting technique. Permutit Co., Ltd. (no corporate connection with Pfaudler-Permutit, Inc.), is supplying the ion-exchange membranes for the 3-million-gal./day plant being built in Africa by Anglo-American Corp. of South Africa, Ltd. (*CW*, Nov. 23, '57, p. 55). Under the new licensing pact, it will handle manufacture and sale of membranes and equipment covered by Ionics' British patents throughout many other water-short areas of the British Commonwealth and former British possessions in Asia and Africa.

•
Ferrochrome is now being produced from domestic ore in an electroreduction pilot plant of American Chrome Co. at Nye, Mont. The

Technology Newsletter

(Continued)

ferrochrome, an alloy "concentrate" of chromium and iron, is used as chrome source in steelmaking; for years, it has been more economical to produce the ferrochrome from imported ores.

The new pilot operation is designed to find out if it's economically possible to make the ferrochrome from U.S. ores—which American Chrome has been mining at a 1,000-tons/day rate for the government (for stockpiling) since Aug. '53. The pilot plant is currently producing 5 tons/day of the chromium concentrate; production may soon go to 15 tons/day.

No domestic ore was used for ferrochrome by the U.S. steel-making industry last year. The domestic ore, lower in chrome content (53%) than foreign material (65%), may nonetheless have some advantages: ferrochrome made from it may have a lower price per pound of chrome, lower melting point, and unusually low sulfur and phosphorus content.

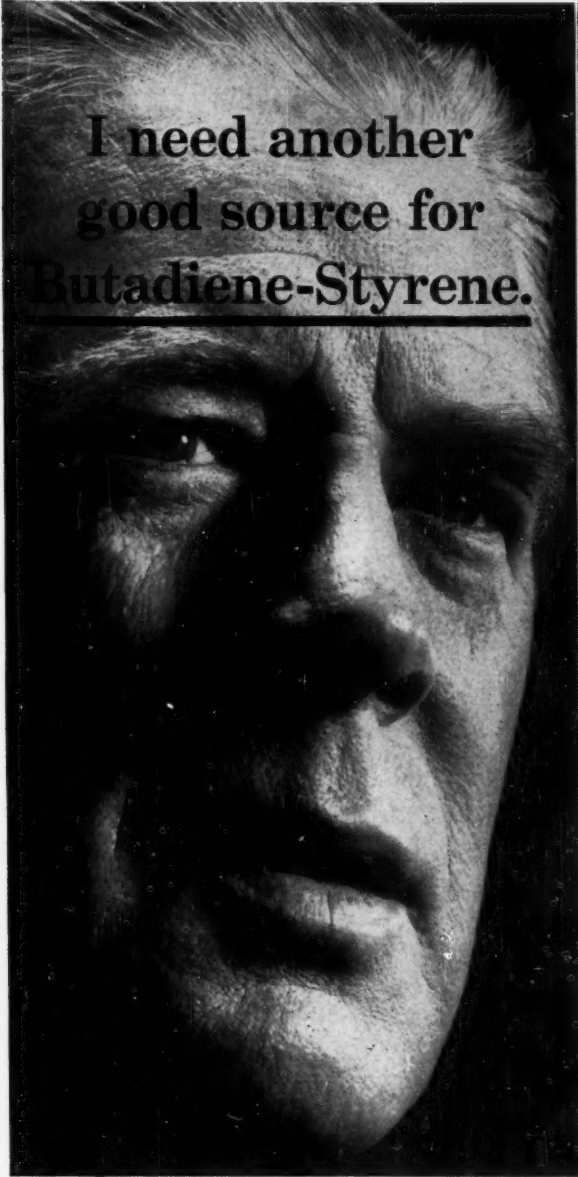
•
Large-scale production of synthetic quartz is now possible according to R. A. Laudise, of Bell Telephone Laboratories, Inc. (Murray Hill, N. J.), and R. A. Sullivan, of Western Electric (North Andover, Mass.). They have been making quartz crystals measuring 2-3 in. across and 5-6 in. long in a pilot plant at Western Electric.

Currently, small pieces of natural quartz provide the nutrient for crystal growth, which takes place at high temperature and high pressure in an autoclave filled with sodium hydroxide solution. Future production will utilize high-quality sand, which is less expensive and more readily available.

Quartz suitable for communication devices (oscillators, etc.) comes mainly from Brazil. The new synthetic form is expected to prove an economical substitute.

•
A new germanium scrap recovery service that enables semiconductor manufacturers to avoid the hidden costs and waste of do-it-yourself scrap conversion is now offered by Sylvania's Chemical and Metallurgical Division (Towanda, Pa.). Key: volume processing. Sylvania says it permits scrap of any germanium content to be returned as high-purity ingot or cut pieces with a minimum resistivity of 40 ohm-cm.

•
Atomic hydrogen is the ultimate chemical rocket fuel but is still years away. That's the gist of remarks last week by Herbert Broida, chief of the free-radicals research section, National Bureau of Standards. Broida concluded this year's University of Buffalo Foster Lectures, reported that while free hydrogen is 100 times as powerful as fuels now used, it loses half its power each day it is stored. It must be held at -451 F in concentric jackets of helium (-452 F) and nitrogen (-320 F), is "burned" by allowing it to warm up to -424 F. Broida has made 1% concentrations, thinks at least 10% concentrations are needed to make the fuel practicable.



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For instance? Take POLYCO XP 24-97. Newly developed by Borden—it is made especially for use in baking finishes on metal surfaces. Noteworthy features: No fire hazard. Non-toxic, so ventilation problems are

greatly reduced. The latex forms a film that, on baking at elevated temperatures, converts to a dry, hard, tough finish. Water, alkali and solvent resistant. Excellent adhesion, too. So for formulation of metal primers and gloss finish coats, take a look at this new Borden "baby"—POLYCO XP 24-97.

Borden is the place to come to for butadiene-styrene! And that goes for

acrylics, vinyl chloride, polyvinyl acetate, polystyrene and butadiene acrylonitrile emulsions and polyvinyl alcohols as well. In other words, *all* your polymer requirements can be satisfied at Borden. *And we mean satisfied.*

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Tidewater President Getty leaves old headquarters for last time.

Moving Day at Tidewater

Tidewater Oil Co. management, settling down this week in its new Los Angeles headquarters building, is now in a position to tell how careful planning smoothed an expensive and potentially disruptive operation. The company spent \$10 million on its new structure, nearly \$250,000 more moving its personnel.

That's a hefty sum for drawing together a staff of about 600. But Tidewater wanted to relocate as many of its San Francisco people as would make the move. The firm also felt it had a responsibility toward employees who were left behind. As a result, it minutely planned the move to disrupt its employees' lives—as well as its office operation—as little as possible.

Detail Planning: By the time President George Getty made the move official by changing his own address, Tidewater had spent a year working out minute details of its transfer. It started last October, by organizing a top-level committee headed by J. Earle Gray, then assistant division general manager. This group was assigned the job of drawing up a set of policies—for instance, to advise on how to aid employees—and submitting their policy suggestions to management.

"We realized," commented a top executive, "that in most cases an employee transfers to a new location to take a higher position, but this was a horizontal move for our employees. So we felt we should enable them to come out of it as financially whole as possible."

Except for the few whose jobs were eliminated (such as elevator operators), all employees were given the opportunity to go to Los Angeles. Of 611 employees, 406—about 66%—decided to make the move. Most of those who stayed behind are married women or unmarried girls who live with their parents; the company tried to help them find new jobs, even contacted firms that might be hiring.

Tidewater also provided:

- An allowance up to \$60/person for an exploratory trip to Los Angeles to arrange for housing. Vacation time was made available.
- Reimbursement of the cost of moving all household goods.
- An allowance of up to \$250

Tidewater—Payoff on Planning

for relocation costs (such as having carpeting cut for their new house).

- Cost of meals and hotel room for as long as 14 days if housing was not immediately available.

- Fare for the entire family for first-class transportation by air, rail or bus to Los Angeles. If the employee drove his own car, he was paid an amount equal to the plane fare for each member of the family.

- A salary advance, if needed.

- Cost of storing household effects 30 days, if necessary.

In addition, Tidewater made arrangements with Los Angeles banks to help employees get real estate loans; gave advice on how to find apartments; obtained travel reservations; secured a moving company to handle each employee's effects; offered to handle damage claims not satisfactorily settled.

Cost Estimate: Tidewater figures it cost about \$30,000 to move the company's equipment and furnishings. Besides personnel moving costs (about \$600/family), other expenses, including purchase of new furniture, are unofficially expected to boost the total tab to \$700,000. There is no terminal pay for employees who didn't make the move.

As to the mechanics of moving, Tidewater decided its departments were too interdependent to be separated by 500 miles, even briefly, so it geared to make the move all at once instead of in several steps. It selected the Thanksgiving weekend to allow employees two extra days to get set up.

Transfer of office equipment started at 8 a.m. Friday (no moving was done on Thanksgiving) and was to be completed by midnight Sunday. Figuring the best possibilities for saving money lay in shortening handling time, Tidewater took steps to plan the smallest details.

A few weeks prior to the move, detailed diagrams were prepared and every item was tagged with the exact location it was to occupy in the new building. Two employees from each floor, plus monitors from the traffic department, did the tagging, and workers packed the contents of their desks and file cabinets into boxes. Movers simply matched up the

tagged furniture with the diagrams. Company employees not involved in the move (for example, district office people) served as monitors in directing movers in both the old and new buildings.

The job of moving the company's records was eased significantly by a controlled records-keeping program started two years ago. This involved sending all inactive files to a record center, where they were examined. Some—about 100 tons—were destroyed, freeing 12,000 sq. ft. of space. The company's equipment and furnishings filled 20 van liners, although much of the furniture at Los Angeles was brand new.

Tidewater's new home is on Wilshire Blvd., facing Crenshaw. The oil company created a wholly owned subsidiary, Tidewater Realty Co., to own and operate the building. It's a six-story, white marble structure — its construction has drawn some criticism from stockholders concerned about the company's recent poor earnings. Tidewater borrowed from a life insurance company, got interim financing from a group of banks.

There's no question that the consolidation move has been expensive. But Tidewater, impeded by a sprawling collection of offices, is convinced that the gains in efficiency, both for the present and over the long range, justify the financing to build the new headquarters. They're also convinced that they will gain a dividend in efficiency and goodwill from the staff.

Strike in Texas Oil?

Down on the Texas Gulf Coast this week storm clouds are boding what may turn into a crippling strike of oil refineries and petrochemical works.

Gradually, the Oil, Chemical & Atomic Workers Union has been mustering strike votes that now involve some 75% of the 95,000 workers covered by oil contracts—and is busily mustering more. It's another sign that business recovery is prompting unions to new militancy.

Biggest clamor for strike action to enforce demands for wage increases is building up in OCAW's District 4, encompassing the Texas Gulf Coast

and Louisiana. The 35,412 workers listed on union rolls in the district make up roughly one-sixth of OCAW's entire membership in the U.S. and Canada.

In that area, says OCAW district director J. Elro Brown, workers in 12 plants* employing more than 14,000 have voted. Brown characterizes the impetus behind the votes this way: "Employees in the petroleum and chemical industries are becoming angered because of the companies' failure to even consider a wage increase since the last one in May '57. We are still trying to settle this problem by collective bargaining and we sure hope it can be done that way."

OCAW President O. A. Knight claims he plans "no premature action on the picket line." He adds that in a vast majority of the plants he is "free now to call a strike at a time and place of my own choosing." The OCAW contracts are bargained on a plant-by-plant basis by local union bargaining teams except in the case of a nationwide agreement with Sinclair Oil Corp. So far, Sinclair has flatly rejected OCAW's wage proposals, the union says.

Knight's claim that 75% of workers covered by oil contracts have taken strike votes indicates that strikes have been approved by some 36,000 workers elsewhere than along the Gulf Coast. A large number of these may well be in Canada's "Chemical Valley," near Sarnia, Ont., where the union is mobilizing now. First company to settle is Dow Chemical Co. (*CW*, Dec. 13, p. 58).

Knight says that nearly all of his union's 600-odd contracts in the oil industry have been canceled or are in the process of being canceled by serving 60-day notices of termination as required under the Taft-Hartley law. OCAW says the last of the oil contracts will expire Jan. 8, under the termination notice.

Things may be happening soon. Last week, Knight postponed a meeting of international staff members scheduled for Jan. 5; he said they would be "occupied in prosecution of the wage drive at that time" and could not be away from their duties.

*The 12 plants: Shell, Crown Central Petroleum and Sinclair at Houston; Sinclair at Corpus Christi; Jefferson Chemical, Texas Co., Texas U. S. Chemical Co., Neches Butane Co. at Port Neches; Gulf at Port Arthur; Magnolia Petroleum at Beaumont; American Oil Co. at Texas City; CitCom Petroleum Co. at Lake Charles, La.

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ADMINISTRATION

Christmas Offerings

Coast to coast, chemical process companies' plants and offices this week took on the festive holiday air of approaching Christmas. But these noticeable departures from tradition were taking place:

- Gala office parties, again this year, were losing ground to the increasing popularity of smaller gatherings and company activities that include the employees' entire families. One example: Union Carbide Corp.'s week-long circus, concluded last week, for employee families in the Charleston, W. Va., area. A trained-lion act topped the bill, which included novelty acts and Santa Claus.

- A significant number of CPI companies were joining the list of concerns abolishing Christmas gifts to company clients and business friends. Instead, those firms are donating to charities in the names of those to whom the gifts ordinarily would be sent.

Bonuses Go On: But traditional Christmas bonus plans continue in full swing throughout the country. Generally, companies report that the recession did not decrease bonuses, although a few firms told *CW* they will give bonuses to fewer employees.

LEGAL

Battery Additive Suit: Attorneys for seven New York companies are this week preparing to answer Federal Trade Commission charges that the firms made false claims about a battery additive they distributed.

Attorneys told *CW* they had no comment except that they had taken the proceedings under advisement and that an answer would be filed within the time limit next week.

The complaint repudiates the defendants' alleged claims that the additive, called variously VX-6, Voltex-6, Voltex and Voltex-Liquilectric, had been tested by the Bureau of Standards, had been used regularly on the *Queen Mary* or *Queen Elizabeth* and had received favorable publicity in *The Reader's Digest* and *Popular Science* magazines.

Companies named in the complaint: Stacey-Warner Corp., Voltex Co., National Dynamics Corp., Campbell-Smith Co., Mapleton Service, Parker Advertising, and David Celler (doing business under his own name).

KEY CHANGES

Louis K. Eilers to first vice-president, Tennessee Eastman Co. and Texas Eastman Co., and to president, Eastman Chemical Products; divisions of Eastman Kodak Co. (Rochester, N.Y.).

Donald K. Ballman and **C. B. Branch** to directors; and **Leland A. Doan** to general manager, Western Division; Dow Chemical Co. (Midland, Mich.).

Frank M. Norton to vice-president, Plastics and Coal Chemicals Division; **Harold E. Imes** to vice-president, **Ralph H. Ratliff** to director of operations, Semet-Solvay Division; Allied Chemical Corp.

Eugene C. Medcalf to manager, intermediates department; **J. F. Bourland** to general manager, Central Research Division; **D. M. Benjamin** to general manager, Manufacturing Services Division; **L. J. Francisco** to general manager Plastics and Resins Division; American Cyanamid.

Howard F. Roderick to president, Sumner Chemical Co., division of Miles Laboratories (Elkhart, Ind.), and vice-president and director of the parent company.

George T. Bayley, **Leonard J. Bertoli**, **John J. Levenson** and **Charles W. B. Wardell, Jr.**, to directors, Century Chemical Corp. (New York).

H. E. Maurer to president, **Walter Lau** to vice-president, Progressive Color and Chemical Co. (New York), subsidiary of Intercontinental Chemical Corp.

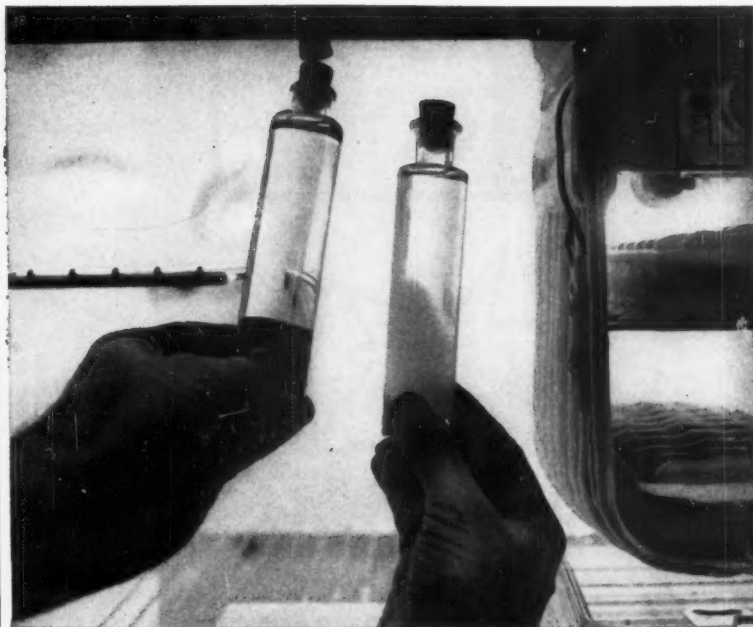
ASSOCIATIONS

Samuel G. Baker, general manager, organic chemicals department, Du Pont, to president, Synthetic Organic Chemical Manufacturers Assn.

Donald L. Katz, head of Dept. of Chemical and Metallurgical Engineering, University of Michigan, to president, American Institute of Chemical Engineers.

KUDOS

To **Eugene J. Houdry**, founder, Houdry Process Corp. and Oxy-Catalyst, Inc., the Society of Chemical Industry's Perkin Medal.



Superiority of GROCO 2 RED OIL revealed in unretouched photograph of low temperature test. Samples of GROCO 2 (left) and competitive red oil (right) were refrigerated at 36°F. for 24 hours side by side. No solids separated out of GROCO 2 RED OIL—it remained so transparent that technician's fingers and steel tray are clearly visible through vial. On right, solid acids separated in large amount.

Titre Is Lowest In GROCO 2 Red Oil

GROCO 2 RED OIL's exceptionally low content of saturated fatty acids—titre 3°C.—is advantage enough in itself to make it top choice for many processors. More than one producer of a liquid shampoo, for example, prefers GROCO 2 because it gives a formulation that stays liquid at low temperatures.

Equally outstanding is its oxidation stability. In the Mackey Test, GROCO 2 remained under 105°C. for 5 hours. There are no oxidation discoloration problems when you formulate with GROCO 2. And there is an absolute minimum of unusable components, making GROCO 2 the best money value of any red oil in its class.

You consistently enjoy an edge in storage, handling, processing and consumer acceptance when you "Always specify A. Gross"—whether your end products are soap, cosmetics, plastics, paints, polishes or emulsifiers.

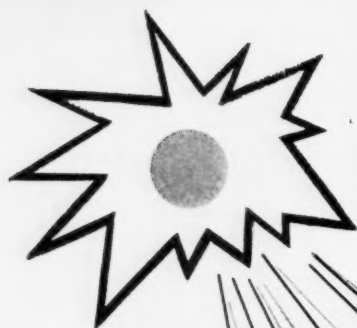
Send for samples and brochure, "Fatty Acids in Modern Industry."

FATTY ACIDS

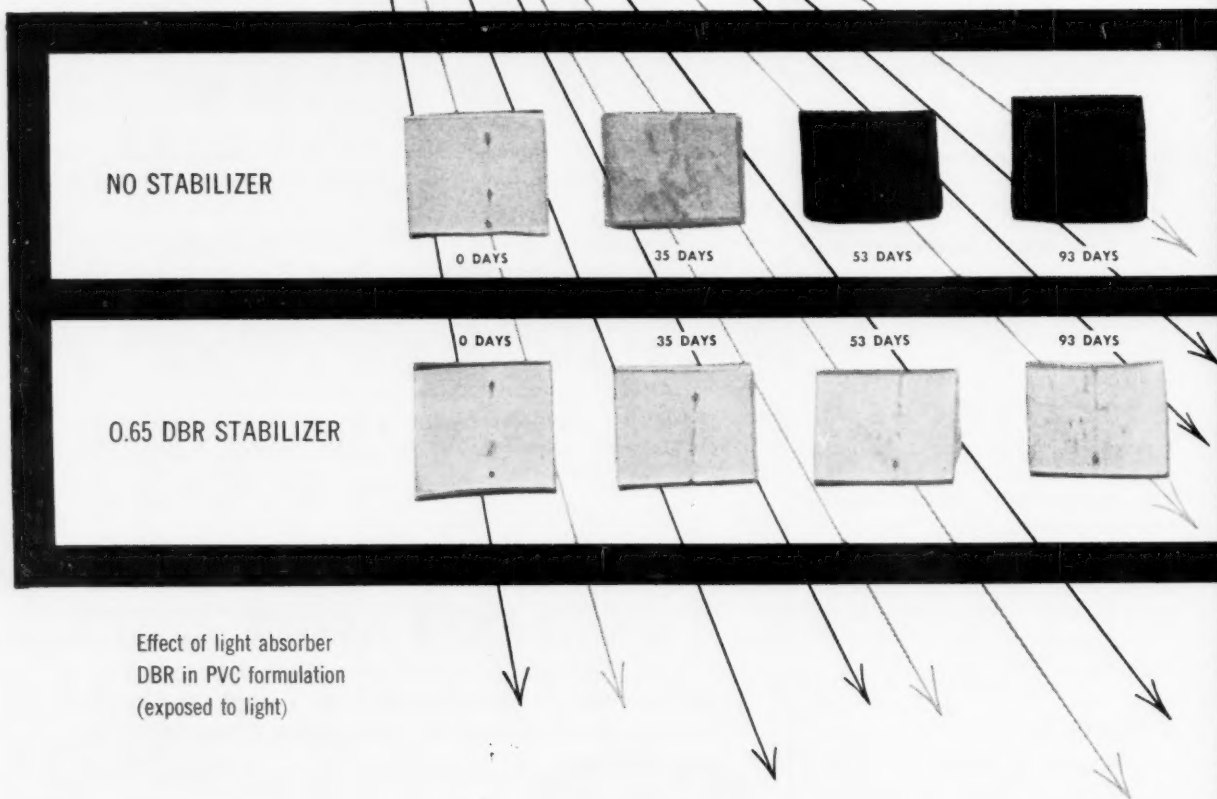
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● Dow's extensive experience as both supplier of a wide range of light absorbers and producer of many primary plastics materials can be put to good use by anyone with a product affected by ultraviolet radiation. Samples for evaluation available free, larger quantities at commercial prices.

protect plastics at unusually low cost

Low cost, versatile Dow light absorbers effectively prevent discoloration, checking and crazing in a wide range of materials. They provide adequate protection for as little as a fraction of a cent per product—often for substantially less than other absorbers on the market today!

In thirty years as a basic producer of absorbers and plastics, Dow has accumulated a vast storehouse of knowledge and technical experience. This valuable background can help manufacturers of plastics, paints, dyes and synthetic fabrics make short cuts in evaluating for their own purposes.

Dow light absorbers are available in commercial quantities and at extremely attractive commercial prices. They can be used in product formulations and sprayed, in suitable solution, on window glass in plants, stores and automobiles to protect displays and interiors.

Samples and a technical brochure discussing the four products in detail are available upon request. Write THE DOW CHEMICAL COMPANY, Midland, Michigan, Technical Service & Development, Department 1301F.



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SALOL. Excellent for cellulosic, hydrocarbon, ester-type and halogen-containing polymers. Also suggested for lacquers, adhesives, sun-tan oils, waxes and polishes. Colorless, low odor, low toxicity. Readily soluble in most solvents, plasticizers and monomers. Acts as a plasticizer itself, thus, partially replacing other plasticizers in some plastic formulations.

ABSORBER TBS. Completely odorless, TBS

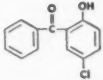
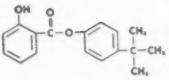
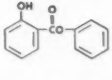
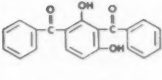
has been found suitable for official regulation agencies for use in certain food packaging films. (Saran Wrap*, Dow's well-known food wrap, contains TBS.)

ABSORBER HCB. Recommended for polyvinyl halides and polyvinylidene halide formulations. Also shows promise for polyethylene, polyesters and the celluloses. Used in combination with basic heat stabilizers in halogen-

containing polymers. DOESN'T REACT WITH ALUMINUM PIGMENTS.

ABSORBER DBR. Most powerful of the Dow absorbers, DBR has a molecular weight high enough to provide long-life usefulness through compatibility and low volatility effects. Most economical absorber for many uses. May be effectively used with antioxidants and HCl scavengers. *TRADEMARK OF THE DOW CHEMICAL COMPANY

PROPERTIES OF DOW LIGHT ABSORBERS

	SALOL 	TBS 	HCB 	DBR 
Synonym	Phenyl salicylate	4-tert-Butyl phenyl salicylate	5-Chloro-2-hydroxybenzophenone	2,4-Dibenzoyl-resorcinol*
Active Ingredient	Approximately 100%	Approximately 100%	Approximately 100%	Approximately 100%
Appearance	White crystals	Off-white crystals	Yellow crystals	Light yellow crystals
Odor	Slight, pleasant	Completely odorless	Nearly odorless	Nearly odorless
Melting Point, °C	41-43	62-64	93-95	125-128
Permanence	Fair	Fair-Good	Fair-Good	Excellent
Wave length, μ for Strongest Absorption	290-330	290-330	320-380	280-370
Solubility, g./100 g. at 25°C.				
Ethanol, Abs.	53	79	4.3†	7.2†
Ethyl Acetate	470	153	20.7	14.8
Methyl Ethyl Ketone	620	197	24.6	40.5
Toluene	460	158	25.0	18.9
Stoddard Solvent	88	39	—	—
Water	<0.1	<0.1	<0.1	<0.1

*Also 16-20% of the 4,6 Isomer

†95% Ethanol

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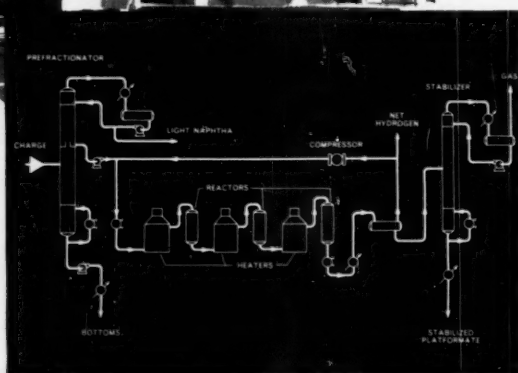


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Equally important, it enables the refiner to produce in commercial quantities excellent base stocks for aviation gasoline and Platformate for aromatic extraction such as benzene, toluene and xylenes, now



in such growing demand for detergents, nylon, plastics, high explosives and many other products.

As shown in the accompanying flow diagram, the Platformer is a compact unit consisting of a reactor section, stabilizer section, and (optional) feed preparation section. It can handle the full boiling range gasolines without prefractionation, or naphtha cuts separated from them, and efficiently processes any naphtha from crude distillation, natural gasoline plants or cracking units.

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Market Newsletter

CHEMICAL WEEK

December 20, 1958

Don't look for an early end to the vinyl resin oversupply. Although some vinyl makers report the industry is now recovering from recession-bred cutbacks—largely because of stepped-up activity in automotive manufacture—there are unmistakable signs this week that the over-all supply-heavy problem of vinyls won't be solved soon.

One indication: Monsanto Chemical's Plastics Division is cutting, by $1\frac{1}{2}$ ¢/lb., its tabs on polyvinyl chloride general-purpose resins (trade-named Opalons). Reason: "to meet competition." Truckload-quantities price is $23\frac{1}{2}$ ¢/lb.; similar reductions apply to all other quantity brackets.

Other producers are also quoting the $23\frac{1}{2}$ ¢/lb. price for straight PVC, higher tabs on special materials—e.g., $24\frac{1}{2}$ ¢/lb. for flooring-grade copolymer, $26\frac{1}{2}$ ¢/lb. for modifier copolymer (used in phonograph records), and $28\frac{1}{2}$ ¢/lb. for record-grade polymer.

These price cuts re-emphasize the need for new markets, if existing heavy overcapacity is to be put to work. Vinyl resin sales this year are estimated at 730 million lbs.—200 million less than total U.S. capacity (*CW Market Newsletter*, Nov. 1).

There's a definite trend toward more specialization; and more PVC will be tailor-made to adapt it to customers' equipment. It means suppliers will need bigger inventories during the next three to five years, to meet needs for more varied materials.

Meanwhile, U.S. polyvinyl chloride capacity got another boost. Borden Chemical last week dedicated a new, \$4-million addition to its Leominster, Mass., PVC plant. The expansion, about a year under way, raises Borden's PVC capacity from 12 million lbs./year to a considerably larger 38 million lbs./year.

Incidentally, Borden is now constructing a \$1.5-million, 5-million-lbs./year polyvinyl alcohol plant at the same location. This installation is scheduled for completion by Oct. '59. Output is slated primarily for textile and paper uses (*CW*, Dec. 6, p. 42).

Makers of photographic movie film are being hit hard by the new and fast-growing practice of recording TV programs on magnetic tape (now all Mylar), rather than on conventional film. That's behind the plugging of movie film's advantages by Eastman Kodak's Ethan Stifle, who recently addressed the Radio & TV Executives Workshop in New York City.

Stifle emphasized what he considers the many advantages of photographic film and—significantly—assured TV executives that faster film-processing techniques are coming; it's on this point that film has

Market Newsletter

(Continued)

been losing out to magnetic tape, which may be used immediately after recording.

Magnetic tape has already taken over in a big way. Example: a major U.S. TV network now tapes 65% of its West Coast broadcast material; some 20-25% in the East. Delayed broadcasting of earlier Eastern programs results in greater use of magnetic tape in the West.

Price differentials between carload and less-than-carload lots of a variety of solvents and chemicals will be increased $\frac{1}{2}$ ¢/lb. Jan. 1 by Union Carbide Chemicals. Primarily affected are industrial products, including esters, ketones, isopropanol, alkylamines, and ethylene amines. Reason for the boost: higher cost of handling small shipments.

Prices of butylated hydroxy toluenes (BHT) antioxidants are cut 10%/lb. by Hercules Powder. Technical-grade Dapac is now 79¢/lb. in tank cars, 81¢/lb. in carloads of drums, 86¢/lb. in less-than-carload quantities, delivered. Similar reductions apply to other grades of the antioxidant. Reason for reductions: production economies are being passed on to consumers. Eastman Chemical met the price cut and other producers will likely follow suit.

Prices of fluorocarbon silicone rubber are reduced 11-18% by Dow Corning. New tabs on Silastic LS-53: \$18/lb. in 1,000-lb. quantities, \$24/lb. in less-than-10-lb. quantities. Originally restricted to military uses, the rubber is now available in "unlimited quantities."

And there's a $\frac{1}{2}$ ¢/lb. price hike on barium oxide by Westvaco. The first price change since early '57 brings the cost to $13\frac{3}{4}$ ¢/lb. in carload quantities. Minimum purity guarantee was increased earlier this year from 89% to 94%; further quality improvements are promised.

A severe drought in the Philippines has boosted coconut oil prices 30%; consequently, costs of U.S.-made fatty alcohols are going up 11% Jan. 1. Du Pont's new quotes on several Lorol fatty alcohols: 39¢/lb. in tank cars, 41.5¢/lb. in carloads, 43.5¢/lb. l.c.l.

SELECTED PRICE CHANGES—Week Ending December 15, 1958

	Change	New Price
UP		
Stearic acid, dbl., pressed, bgs.	\$0.0025	\$0.1675
Tallow acids, dist., dms.	0.0025	0.1425
Tankage, animal feeding, 9-11% ammonia, N. Y., bulk, unit-ton	0.05	6.40
DOWN		
Mercury, 76 lbs./flask, net flask	\$2.00	\$222
p-Nitrotoluene, tech., l.c.l., dms., wks.	0.02	0.28
Tin metal, Straits	0.0025	0.99
p-Toluidine, tech., flake, dms., frt. alld.	0.04	0.50

All prices per pound unless quantity quoted.

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Fast, dependable supply, for example. Allied produces crystal and uncoated pelleted urea at two strategic locations — South Point, Ohio and Omaha, Nebr. CL and TL shipments are made directly from either plant, LTL lots from conveniently located distributors. As for technical service, a competent staff with a customer viewpoint is ready to help any time you call.

Wherever you are, you're in range of Allied's supply and service facilities — another reason why Allied is your best source of urea.



specify Allied **UREA**
and get more than you specify



Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—
85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Ammonium Nitrate • Sodium
Nitrate • Methanol • Nitrogen Solutions • Nitrogen Tetroxide • Fertilizers & Feed Supplements

Nitrogen Division • Department U4-7 • 40 Rector Street, New York 6, New York



National Potash mining facilities at Carlsbad, N.M., will get a big new customer next year when . . .

Co-op Digs Deep for Basic Potash Position

In a bid for a basic raw-materials position and additional marketing strength, Central Farmers Fertilizer—a Chicago-based wholesale co-operative—will buy into National Potash (New York). The latter is one of the nation's major private-industry potash producers.

Freeport Sulphur and Consolidation Coal, joint owners of NP, are selling small, equal amounts of stock to CFFC. Trade sources indicate that the initial volume of stock involved is less than 10% of NP's total. Additional CFFC purchases of NP's stock are slated for the next several years. The ultimate amount, however, says NP, will not give the co-op "independent" control; it would need the votes of other stockholders to swing a policy change.

But if CFFC has not gained voting control, it has obtained a large measure of indirect control: it will undoubtedly become NP's only major domestic potash customer. CFFC's needs will take all of NP's Carlsbad, N.M., output (nominal capacity: 225,000 tons/year, K₂O basis).

In effect, the co-op will become a distributor for NP and will supply potash to 22 regional and agricultural co-op members that manufacture and distribute fertilizers in the Midwest and Pacific Northwest. For its services, CFFC will receive a small sales

commission—probably under 5%. It will add several million dollars in sales to its \$20-million annual volume.

Wide Scope: The move is of significance to CFFC, NP and the potash industry. For Central, it is the first plunge into potash—the co-op has never previously sold the material. But more important, it gives CFFC a direct source of supply. And the co-op is assured of a degree of control over NP's future expansion plans. The potash will be sold at prevailing market prices.

The hook-up also strengthens the co-op's ability to compete with private industry. It has had "captive" ammonia production at St. Paul Ammonia Products and Cooperative Farm Chemicals (it owns part of both) for some time. It will have phosphate rock and triple superphosphate production at its now-abuilding, \$16-million installation at Georgetown, Ida. Now that it becomes basic in potash, it will be able to offer a single source of supply for all three prime nutrients.

National Potash's biggest benefit from the stock sale: it gains an assured customer. As the nation's newest producer and with one of the industry's highest unit costs, the firm has found the competitive going rough in a business that is characterized by severe overcapacity and shaky price structures. Customers' frequent shifts from

one supplier to another will have much less effect on NP. Moreover, since the co-op will be NP's primary customer, NP will be able to shave sales and administrative costs enormously. The sales force will no longer be required after the end of this season.

The arrangements will also provide NP with a third major advantage: it will provide fast growth. NP seems sure to profit from CFFC's rapid growth plans. Both companies estimate that additional potash facilities—either in New Mexico or in Canada—will be necessary in a few years.

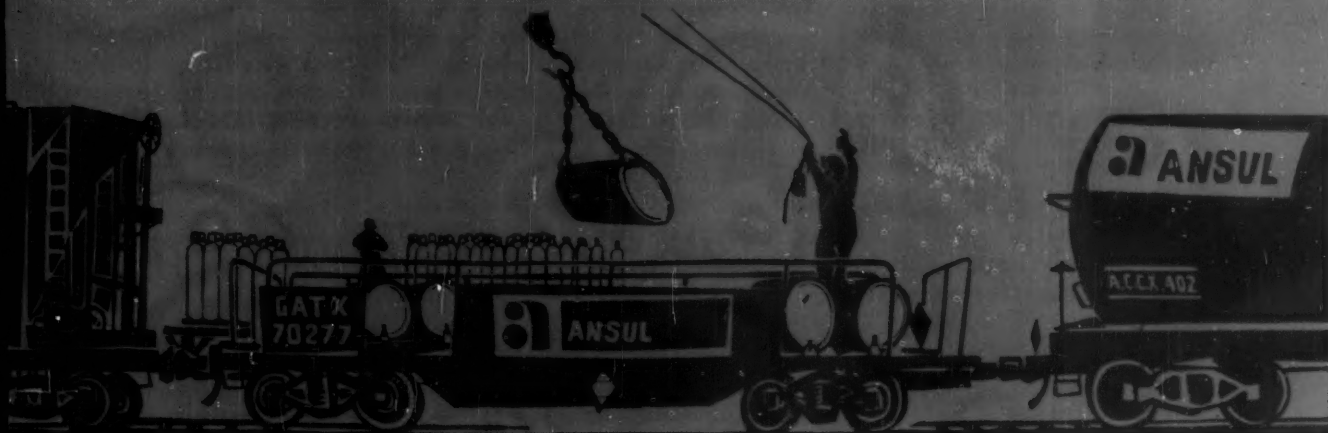
Industry Reaction: Potash producers are uncertain about the long-term effects of the NP-CFFC deal. Potash prices probably won't be depressed by the acquisition—prices are already at "rock bottom." Biggest worry in the trade is that CFFC will eventually take over NP. Said one executive of a competing potash firm, "Such arrangements have usually led to ultimate control."

Further co-op vertical integration in potash, say trade sources, isn't in the immediate future—mainly because high cost rules out small operators. But the benefits of the arrangement—in this case, vertical strength for CFFC and a steady, big-volume outlet for NP—may be more than other co-ops can resist.

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141	Diethylene Glycol Dimethyl Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$ (DGLYME)	162.0	70.0	7.0
161	Triethylene Glycol Dimethyl Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$	216.0	111.1	11.1
181	Tetraethylene Glycol Dimethyl Ether $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$ (Dimethoxy Tetraethylene Glycol)	275.3	140.5	140.5



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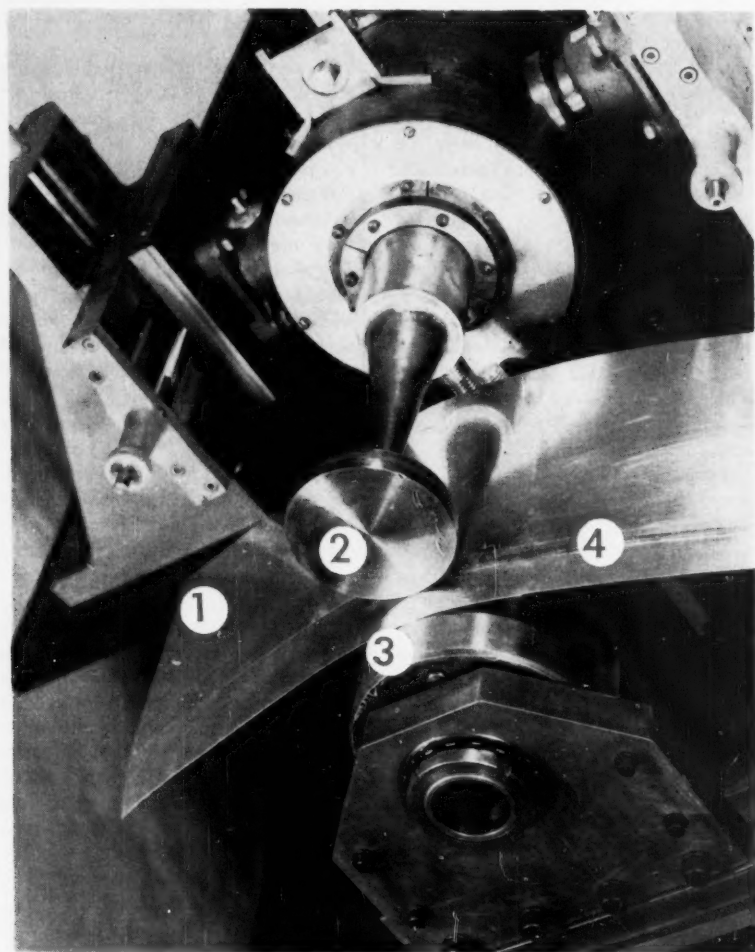


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Metal parts (1) are clamped under moderate pressure between welding tip (2) and 'anvil' (3). Mechanical vibrations at ultrasonic frequency are transmitted to welding tip from electronic transducer, shearing particles on the two metal surfaces. More intimate contact between particles results in a strong, uniformly welded seam (4).

Ultrasound Takes to Welding

This week many process industry firms faced with difficult welding problems are for the first time giving serious study to ultrasonic welding techniques, like the one pictured above. Two recent developments indicate that the technique is no longer a laboratory method.

One significant event is Aeroprojects Inc.'s display of a half-dozen pieces of commercial ultrasonic welding equipment in a hall near its West

Chester, Pa., plant. It is the first time industry has had the chance to see this amount of commercial equipment in one spot, although Aeroprojects has been developing ultrasonic techniques for about eight years.

And, just the other week, at Pittsburgh, Westinghouse became the first of the big electrical equipment houses to reveal it is working experimentally in the ultrasonic welding field. It has a seam-welder, but isn't

set to talk commercial plans yet.

Welder's Helper: The basic role of ultrasonic welding seems to be in complementing other types of welding. Its advantages: there is no melting of metal, and no current flows through the metal junction. Only a small amount of heat is generated (through friction), and the metals remain in wrought condition—they are not changed to the cast condition, as is the general case in normal welding.

Soft aluminum and copper, difficult to join by other welding methods, are easily united by ultrasonics. Large aluminum producers are now experimenting with Aeroprojects' commercial welding tools.

And, because special controlled atmospheres aren't required, the welding of titanium and zirconium by ultrasonics seems commercially attractive. The welding of molybdenum, tantalum and palladium are other potential applications.

Still other pluses: bimetal ultrasonic welding doesn't give corrosion-susceptible metallic mixtures; pre-cleaning, other than degreasing, of metal surfaces is not required; electric-power requirements are low for many of the joining operations.

Technique Outline: Ultrasonic welding is basically simple: electrical energy is converted into high-frequency (above 15 kilocycles) mechanical vibrations by means of a transducer. The vibrations pass along a coupling bar to the welding tip, which may be a fixed rod for spot-welding, or a wheel or roller for seam-welding.

The actual welding mechanism appears to be the grinding action caused by the rapid vibration of the welding tip. It results in intimate contact between the particles on the surfaces of the two metals and the eventual joining together of the metals.

Aeroprojects, using statistical techniques, has demonstrated that ultrasonic welds have the strength of resistance welds and greater uniformity.

But getting the process to work isn't easy. Aeroprojects, which lays sound claim to being first in the field, admits that it took more than five years' work to find a way to join layers of aluminum foil. Now, Westinghouse reports it is welding 0.010-in. aluminum sheets in a continuous seam. Aeroprojects is now welding

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aluminum leaves 0.090-in. thick without difficulty. Moreover, Gulton Industries. (Metuchen, N.J.), has developed techniques over the past year and a half for welding 0.125-in. aluminum sheets. Aeroprojects predicts thickness will ultimately be no problem.

In present equipment, only the piece of metal in contact with the welding tip must be thin. This means that cladding a heavy plate with a thin sheet of metal, say titanium or zirconium, for use in chemical reaction vessels, etc., is potentially attractive. And, although it's necessary to clamp the pieces together, this clamping force need be only a few hundred pounds. When one piece is a heavy plate, it may be used as the anvil or bottom clamp, while the welding tip is used as the upper clamp.

Problems, Costs, Growing Pains:

Although there are a few ultrasonic welders in commercial use, and Aeroprojects has recently set up Sonobond Corp. to sell its commercial models, each welder still must be tailored to suit the application. For example, vibration frequencies must be suited both to the metals to be joined and to the thicknesses of the metals. And, no company has had experience enough to consider any job routine.

Naturally, the need for custom equipment boosts the cost of equipment. Although some simple foil welders may cost only a few thousand dollars, the price range of welders for heavier-gauge metal is usually between \$15,000-20,000.

Frequency control must be built in — frequency variations will result in unsatisfactory welds. And good electronics maintenance is necessary. But, Aeroprojects claims, ultrasonic welders actually aren't as complicated as resistance welders and are easier to operate.

For welding aluminum, the installed cost of the equipment is lower, or at least on a break-even basis, with other types, says Aeroprojects. It points out that regular welding equipment would require heavier bus-bars, etc., to carry the power load. And, the cost of metal-cleaning equipment is not needed with the ultrasonic equipment.

Also, in the case of some non-ferrous metals, power requirements are low. With aluminum, for example, cost is only about 5% of that for resistance welding, says Aeroprojects.

Gulton claims even further power economies are possible when piezoelectric (ceramic), rather than magnetostrictive (nickel), transducers are used.

Nevertheless, power requirements for ultrasonic welding of steel are much higher than for conventional systems, and makers of ultrasonic equipment state flatly that they cannot possibly compete in this field.

Growing Pains: The ultrasonic firms have another problem to contend with — growing pains, and the none-too-favorable reputation that often goes with the term. Not long ago, ultrasonics was billed as the solution of a limitless number of problems. To live down this flamboyant reputation, the reputable firms have adopted a conservative policy.

For example, Aeroprojects cautiously states that ultrasonics shouldn't be considered the first choice in solving any problem. But if other methods are costly, or fail, ultrasonics may be the solution. In fact, at Gulton, welding is regarded as the application with the greatest potential for ultrasonics; but the guess is that much of this potential won't be realized for at least another five years. During this time, the chemical industry, with its growing list of exotic construction material requirements, is sure to put ultrasonic welding to the test.

EQUIPMENT

Water-Concentration Analyzer: For measurement of water concentration in liquid and gaseous process streams, Analytic Systems Co. (980 North Fair Oaks Ave., Pasadena, Calif.) offers its new Series 500 photometric analyzer. The unit is designed to measure most materials that absorb wave lengths in the near-infrared range. Standard and explosionproof types are available.

In-line Relief Valve: Republic Manufacturing Co. (15655 Brookpark Rd., Cleveland 35) reports that its new in-line relief valve, for 5,000-psi., high-flow, high-temperature service, may be set for any pressure by turning external adjusting nuts. Pressure and return lines do not have to be disconnected. The valve contains one packing, which may be replaced without removing the valve from the line.

Vibration Snubber: The Vibrasnub, a hydraulic vibration snubber for pip-

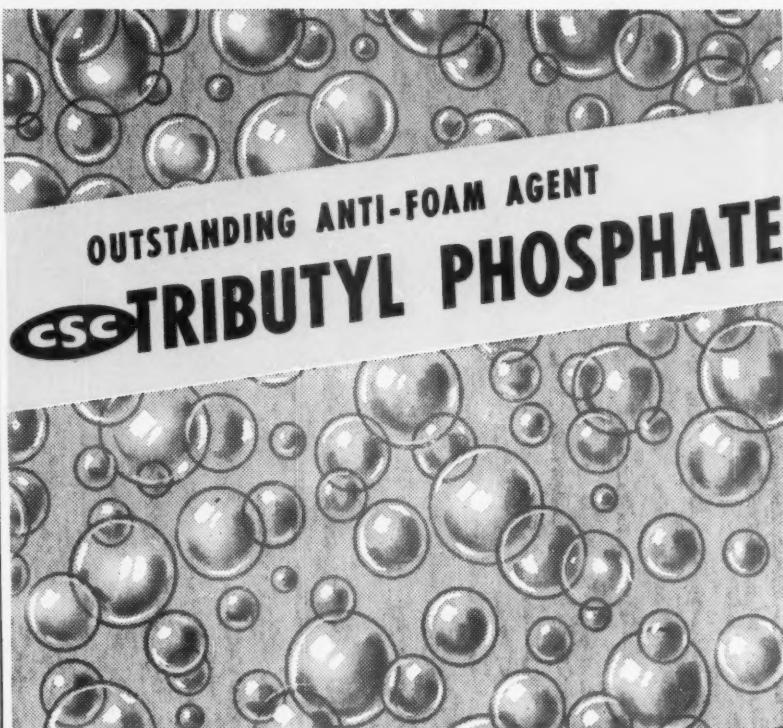
ing and high-temperature process systems, is a new product of Barco Manufacturing Co. (500 North Hough St., Barrington, Ill.). The 2½-in. size has a load capacity of 7,000 lbs.; the 4-in. size, 20,000 lbs. The snubber is said to stop or restrain dynamic vibration and shock loads, gradual thermal expansions and contractions.

Coating System: A new phenolic-vinyl system for coating metals without surface preparation by sandblasting has been developed by Union Carbide Plastics Co. (New York). The system uses phenolic resin-based primer and a vinyl top coat. Surfaces need only wire brushing before applications of primer and top coat. The system has had extensive testing of exposure panels in Florida and Pittsburgh, plus a two-year industrial trial, to back up claims, says Carbide.

High-Capacity Centrifuge: Dorr-Oliver Inc. (Stamford, Conn.) is now marketing an improved design of its Merco centrifuge said to up capacity and operating efficiency. New rotor design, heavier wall sections, larger disc areas, permit 37-in. rotor to operate at 3,300 rpm., handle up to 600 gpm. of some slurries at lower power requirements per gallon. The unit is available only with stainless-steel rotor and bronze or stainless-steel housing.

Snow Disposal: For large parking areas, Esso Research and Engineering Co. has developed a submerged-combustion melter for rapid snow disposal. Equipment measures 8 cu.ft., melts snow at 25 tons/hour. Cost of prototype: \$7,000; future models are expected to cost less. Oil cost for prototype's operation during 8-in. snowfall: about 25¢/car parking space. ER&E has licensed Thermal Research and Engineering Co. (Conshohocken, Pa.) to make and market the equipment.

Continuous Blender: A continuous-flow blender that proportions, mixes and discharges a variety of dry and liquid mixtures is a new offering by The Johnson-March Corp. (1724 Chestnut St., Philadelphia 3). The blender, called Verticone, is said to suppress dust from unloading of cyclone collection-bins, bag filters and electrostatic precipitators. Wetting of materials may be controlled to less than 1% moisture.



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Wilmington get-together of MCA's 30-man board of directors hears report on activities by . . .

MCA's Mission — Making

By Jan. 5, the Manufacturing Chemists' Assn. will consolidate its offices in a new Washington, D.C., headquarters. The new address will be Washington's Universal Building, at 1825 Connecticut Ave. The move aptly symbolizes a trend that—in the past two decades—has knit a casual confederation of chemical makers into the cohesive group that is today's MCA. But—for all the organizational improvement—is the Manufacturing Chemists' Assn. an effective industry group? Or is it, as some say, simply an association of 177 member chemical firms adhering to too narrow a principle?

A faithful likeness of MCA lies somewhere between these opposing views, but far closer to the former.

It's no accident that MCA head-

quarters have been, since 1919, in Washington, D.C.—handy to governmental agencies, bureaus and, significantly, the halls of Congress. And, of course, MCA is registered under the Federal Regulation of Lobbying Act.

The association frequently swings its weight in trying constructively to influence national and local legislation; it has led, for instance, in drafting specific measures on food additives and precautionary labeling. MCA officials aren't hesitant, either, in arguing their case at regulatory or legislative hearings—on tariff, pricing, reciprocal trade, and similar issues pertinent to the industry.

Even now, the association is mobilizing forces to battle a proposed relaxation of strategic-goods export

regulations that would permit the Soviets to buy complete U.S. chemical plants.

Full-time president, General John "Ed" Hull (USA, Ret.), this fall underscored the association's Washington activities in a report to his 30-man board of directors.

"MCA," understated Hull quietly, "was very much involved in legislative liaison during the recent session of Congress."

How "involved"? Look at the outcome of some important measures in the light of MCA's determined stand on each:

- Passed: an amendment to the Antidumping Act providing for public notice of antidumping investigations. Most of MCA's recommendations were enacted into the law.



... MCA President Hull, flanked by executive officers (left to right) Connor, McClure, Crass.

the Chemical Industry's Case

- **Shelved:** S-11, the Patman-Kefauver amendment to curtail "good-faith" defense in competitive pricing. MCA violently opposed similar amendments in '56 and '57; was "gratified" that the "objectionable" legislation was again put on ice—possibly for good, Washington observers believe.

- **Passed,** after nearly seven years of squabbling: a food additives bill to control the use of chemicals in food. Although the new law doesn't precisely follow the pattern preferred by MCA, many member firms cheered its passage. A decided MCA victory: getting "food additives" substituted for the description "chemical additives."

Volunteer Work: But MCA's operations aren't limited to the political arena. It engages in about 35 basic

activities, ranging from aid-to-education to water transportation of chemicals. Projects, for the most part, are initiated by unpaid industry experts and specialists serving on 24 technical and functional committees. These activities are coordinated by staff secretaries.

Greatest attention in the technical area has been given to promoting safety practices. MCA's general safety committee administers a program emphasizing chemical plant safety, presents annual safety awards. To date, it has published some 70 data sheets on safe handling of potentially hazardous chemicals.

Traffic, transportation and packaging of chemicals have for more than 50 years been major areas of interest. For instance, a carboy committee,

one of MCA's first technical groups (circa 1905), was instrumental in abolishing the old hand-blown balloon carboy, eventually achieved industry acceptance of a safer standard of container.

Do such activities pay off? Chemical shippers may save an estimated \$8 million/year as a result of MCA proposals for amending classification tariffs to include 55-gal. tight-head, 20-18-gauge steel drums for multiple-trip liquid product transportation. Already, the National Classification Board has okayed changes in motor carrier regulations, and railroads throughout the nation may follow suit next week.

Fight with AMA: MCA works cooperatively with other business and professional groups. One exception to

Five members of the staff—the men who



Cleveland Lane

Assistant to President Hull; left Pennsalt in '53 to tackle tough assignment setting up MCA's 'voice of industry' group. Supervises PR, education activities.



Allan E. Settle

New director of public relations; PR and newspaper background; joined Monsanto Magazine in '50; did general corporation PR work; served on MCA committees.



James F. King

Assistant to MCA president, responsible for government liaison; ex-newspaperman; 18 years as top-level administrator in U.S. agencies—Defense, DPA, ODM.

the normally smooth collaboration is the current conflict between MCA's labels and precautionary information committee (LAPI) and the American Medical Assn.'s committee on toxicology.

Nub of the disagreement: labeling of dangerous chemicals. AMA is pushing a "Model Uniform Hazardous Substances Act" to regulate the distribution and sale of hazardous substances for household, commercial and industrial use. LAPI maintains that commercial and industrial chemicals are in general properly labeled, since its manual, "A Guide to the Preparation of Warning Labels," is extensively used by chemical shippers, and has been the basis for labeling laws and regulations. (The association has succeeded in pushing its model precautionary labeling legislation onto the lawbooks of eight states.)

Earlier this year, MCA representatives* strongly implied that the AMA "model" should be scrapped or, at the most, be revised to cover house-

hold use of chemicals only.

MCA's mind is not always on day-to-day business. Well-received, and exciting in a low-pressure way, is MCA's aid-to-education program. It was launched in '55 under the guidance of an education advisory committee, although a groundwork for the incursion into educational circles was cautiously laid as early as '51.

Recalls a prominent educator: "MCA's motives, in the beginning, were suspect; for years, administrators and teachers had been annoyed by well-meaning but poorly planned educational aids offered by industry. These invariably ended up in school paper-balers or gathered dust in stockrooms."

The committee overcame such misgivings by bringing educators into the program for guidance.

Now in the third year of a five-year plan, MCA has furnished, on request, material to more than 11,000 junior high schools; developed the concept of—and prepared about 30—"open-end" experiments (in which students, in contrast with con-

ventional experiments, do not know how things are supposed to turn out). These are now being used in about 6,000 senior high schools. In addition, six new teaching films for high schools are being produced—two have been completed.

Cleaning Up a Problem: Among the more important projects are those relating to air and water pollution abatement. Through its two committees — one for water pollution, one for air pollution—the association has long taken a prominent part in legislative and technical programs to clean up a sticky chemical industry problem. One measure of its success: 2½-5% of all costs of chemical plant construction are now earmarked for pollution abatement facilities.

The water program started in the early '20s, when MCA was concerned lest blanket legislation be enforced indiscriminately, cause undue hardship to chemical manufacturers.

A series of "smog" incidents in the late '40s focused nationwide attention on air pollution. By '49, legislatures in 44 states were working on control

*Union Carbide's Thomas Nale and Du Pont's Sanford Hill.

Extend the machinery of MCA



Frank H. Carman

MCA technical director; was general manager of Plastic Materials Manufacturers Assn. from '45 to '50, when PMMA and MCA merged. Guides plastics policy.



Charles H. Maywood

Transportation and packaging engineer for MCA since '50; was with Assn. of American Railroads' Bureau of Explosives. Handles 'oldest' problems.

Special Report

measures. MCA officials, fearful that oppressive legislation would evolve on a federal level, authorized formation of an atmospheric pollution abatement committee to investigate and suggest control and treatment methods for consideration by legislators.

Plastic Partners: More than 45 MCA member firms are drawn together by mutual interests into a plastics group, which concerns itself with such matters as fundamental research, building and construction codes, and palletizing and bulk-handling of finished product. One activity is the publication of "Technical Data on Plastics," a compendium of data on the properties of commercially available plastics. A new plastics-in-building committee, formed last year, is fighting hard to establish building-code recognition of plastics construction materials.

Currently, MCA runs on a regular budget of close to \$670,000. Some activities—e.g., education, and certain aspects of its plastics committee work—are financed separately by participating member companies. (As of last

month, contributions to the MCA education fund amounted to over \$162,000.) Such extras may well boost MCA's total operating expenditures this year to more than \$950,000. Just 20 years ago, MCA—with 85 members—spent less than \$27,000.

MCA members pay annual fees assessed in proportion to their chemical sales.

A favorite MCA boast is that "member companies represent over 90% of the chemical productive capacity of the industry." But, in reality, the figure could be pegged closer to 96%. Listed among the group's 177 member firms are most of the largest U.S. (and all of the independent Canadian) producers of chemicals and allied products.

But MCA is no "big-company" organization, insist its boosters. "Approximately one-half the membership," says Secretary-Treasurer Maurice Crass, Jr., dean of MCA's present permanent staff of 49, "comes under the category of small business as defined by the U.S. Dept. of Commerce."

In the Beginning . . .: The Manufacturing Chemists' Assn., in its long history, has undergone many transitions, triggered, for the most part, by the needs of the times. For example, in 1872, when regulations were nonexistent and standardization unknown, it was understandable that the association's 17 charter members should be concerned chiefly with the safe transportation of their products.

The technical problems of packaging and transportation were handled by MCA's small executive committee until shortly after World War I. By that time, growth of the fledgling chemical industry had spawned a multiplicity of related problems, necessitating formation of specialized committees—the groundwork for today's efficient setup.

The depression of the '30s, understandably, ushered in a low period of MCA activity; member firms were too busy tightening belts to worry about association doings.

With the advent of World War II, MCA could have been considered almost an adjunct of the federal gov-

ernment, worked intimately with war agencies and bureaus on tough-nut problems of priorities, packaging, production, manpower, etc.

"The work of the association," recalls Harry Derby, MCA president in 1942-46, "was devoted almost entirely to war work."

Slow Growth to Leadership: Perhaps the most significant change in MCA's status as an industry association was that revolving around the selection of William Foster—first MCA president to be chosen from outside chemical company ranks—as president in '53.

Prior to the early '50s, except for the war periods, the association remained pretty much a typical trade group. A small staff, in a small Washington office, dealt with affairs inside the industry, busied itself with perhaps 10 or so narrowly defined chemical trade functions.

Accomplishments along these lines were important. But MCA's activities were little known beyond the circle of industry executives who attended the association's meetings and the government agencies with which its committees worked.

The lack of wide recognition was

an inevitable result of the "it's-nobody's-business" policy formulated by earlier officials and carried forward into the '30s by such conservatives as Du Pont's Lamont Du Pont, American Cyanamid's William Brown Bell, and Monsanto's Charles Belknap.

Among those who opposed this policy—and who are often credited as being the prime movers who set MCA on the long road to its present eminence—were George Merck of Merck & Co., Du Pont's William Ward, and Charles "Carl" Munson, present chairman of the board of Air Reduction. These three, led by Munson, scouted the country looking for a man with prestige enough to fill the role of MCA spokesman.

They found Bill Foster.

Foster came to MCA as its first full-time, paid president (at \$60,000 a year). He had a wide background at the highest levels of government service as Under-Secretary of Commerce, as Economic Cooperation Administrator and as Deputy Secretary of Defense. He knew his way around Washington, was respected and well-liked in the chemical industry.

It was no secret that Foster was an "internationalist," held strong views about "liberalization" of world trade barriers. But his frankness in expressing such sentiments shocked the high-tariff advocates among MCA members.

Tariff Tiff: Early records of the association, laboriously handwritten (and long since lost in a fire), revealed a serious concern for the need of tariff protection for an infant industry. Whether that need still exists is—and has been—one of the main discordant notes in MCA's usual song of unity.

The association's announced policy of advocating "selective" protective tariffs sparked one of the few instances of serious opposition among MCA ranks and was partly responsible for Foster's resignation in '55.

MCA—pushed by a high-tariff faction, including Monsanto, Dow, Du Pont—had been fighting hard to prevent an "acceleration in the pace and extent of duty reductions."

Most voluble opponent of the MCA stand was Thomas Cabot, president of Godfrey L. Cabot, Inc. Matters between Cabot and the association came to a head at a tariff and international trade panel discussion at

MCA's '54 winter conference, resulting finally in a letter from Cabot to MCA President Foster: "I have about despaired," wrote Cabot, "of softening the position of MCA against (President Eisenhower's) trade program, and accordingly tender the resignation of my company from the association."

A few years ago, MCA almost acquired a partner that would have been anathema to its low-tariff adherents. Merger with the Synthetic Organic Chemical Manufacturers Assn. was proposed by many in the industry who saw no need to support two trade groups—SOCMA and MCA had been holding joint meetings for several years.

Some MCA officials, including Foster, were adamant against adopting SOCMA's high-tariff line. There is still much duplication of membership, but much less talk of merger.

Inconclusive Battle: During his tenure, Foster pushed hard to make MCA a bigger factor in the industry than it had ever been before. He broadened the association's activities and put a new emphasis on public relations to explain the chemical industry to the general public and—more importantly—to top government officials.

The changeover from a stodgy to a vital organization was not without its problems. Indeed, Foster was not able to carry the day completely. His resignation after two years signaled a less-than-complete victory for those who were trying to steer the association into new channels.

Foster resigned for two reasons: tariffs, of course, and lack of agreement on how far the MCA president's authority should extend. His friends do not give priority to either. Rather, they think the two are linked.

Foster insisted that once a position is taken by the MCA board of directors, then that policy should stand. Instead he found that some members—though a minority—would hack away at the policy, make it difficult for him to present a "one-voice" association.

General Takes Command: Hull, personally endorsed by his predecessor, has a less provocative approach. Criticism of Hull is infrequent, but what little there is asserts that he has stepped too gingerly trying to avoid raising major issues.

Back to Industry

Claude E. Hobbs: Lawyer, ex-MCA staff counsel, now director of government relations for Westinghouse. Was key man in pushing MCA stand on food additives, other legislation.



There are some, however, who believe that General Hull has raised a standard as significant as Foster's liberalized-trade flag: his stand against broadening chemical and strategic trade with Soviet Russia. Hull, drawing heavily on his military background,* has convinced MCA that it is foolish to risk increased exchange of goods with a potential enemy.

Frequently, MCA as a group moves slowly, almost ponderously. It has taken the association a good three months to declare resistance to Nikita Khrushchev's bid to buy U.S. technology, but now the gloves are off. MCA's opposition, outlined in a Hull memorandum to the Dept. of Commerce, flatly declares that the Russian proposition is "dangerous" to the Western world. And at a recent meeting, MCA's powerful board of directors authorized formation of a permanent committee to help throw a roadblock to any one-sided Soviet-U.S. commercial relationship.

There's little doubt that the MCA attitude is a strong force militating for a U.S. turndown of Khrushchev's proposal. "Combating the deal," says Harry McClure, Union Carbide vice-president, and present MCA chair-

*Retired from the Army in April '55 with the rank of full general after 38 years' service; was U.S. and UN commander-in-chief in the Far East; holds the Distinguished Service Medal with three Oak Leaf Clusters, Silver Star, Legion of Merit, and 20 other awards and foreign decorations.

man, "will be one of the major aims of the association."

Strength at the Top: Embracing "major aims" has been an integral policy of MCA's governing body, especially since the association's incorporation in '48. At that time, a strong board of directors replaced the comparatively small executive committee and assumed management of the corporation's business and affairs. The change also effectively dissipated the social-club atmosphere that had earlier pervaded executive meetings. (The executive committee today, headed by Merck's John Connor, is one of five committees functioning under direction of the board of directors. The others: finance, membership, program, public relations policy.)

The relationship between the president, the board and the executive committee, at least in the Hull regime, is well defined. If a decision is asked of the "general," as he is invariably referred to, and he's convinced that his decision is in accord with MCA policy, he will give the word. If the decision appears to be out of step with association policy, he doesn't hesitate to toss it to the executive group. In any case, Hull seldom neglects to keep the chairmen of the board and the executive committee informed of his actions.

The general is no dictator. But

Special Report

neither is he a figurehead. He runs the MCA staff, keeps a knowledgeable finger on the pulse of its activities through weekly, informal meetings in his Japanese souvenir-decorated office in Washington's Cafritz Bldg., 1625 "Eye" St.

Progress Brings Problems: New problems and projects, arising from an increasing membership with constantly expanding diversification, continually confront MCA.

In just the past year, new activities undertaken were related to insurance; plastics in building; reagent and fine-chemicals nomenclature (this *ad hoc* committee completed work on, and just published, a manual of 300 recommended abbreviations); and reactive metals.

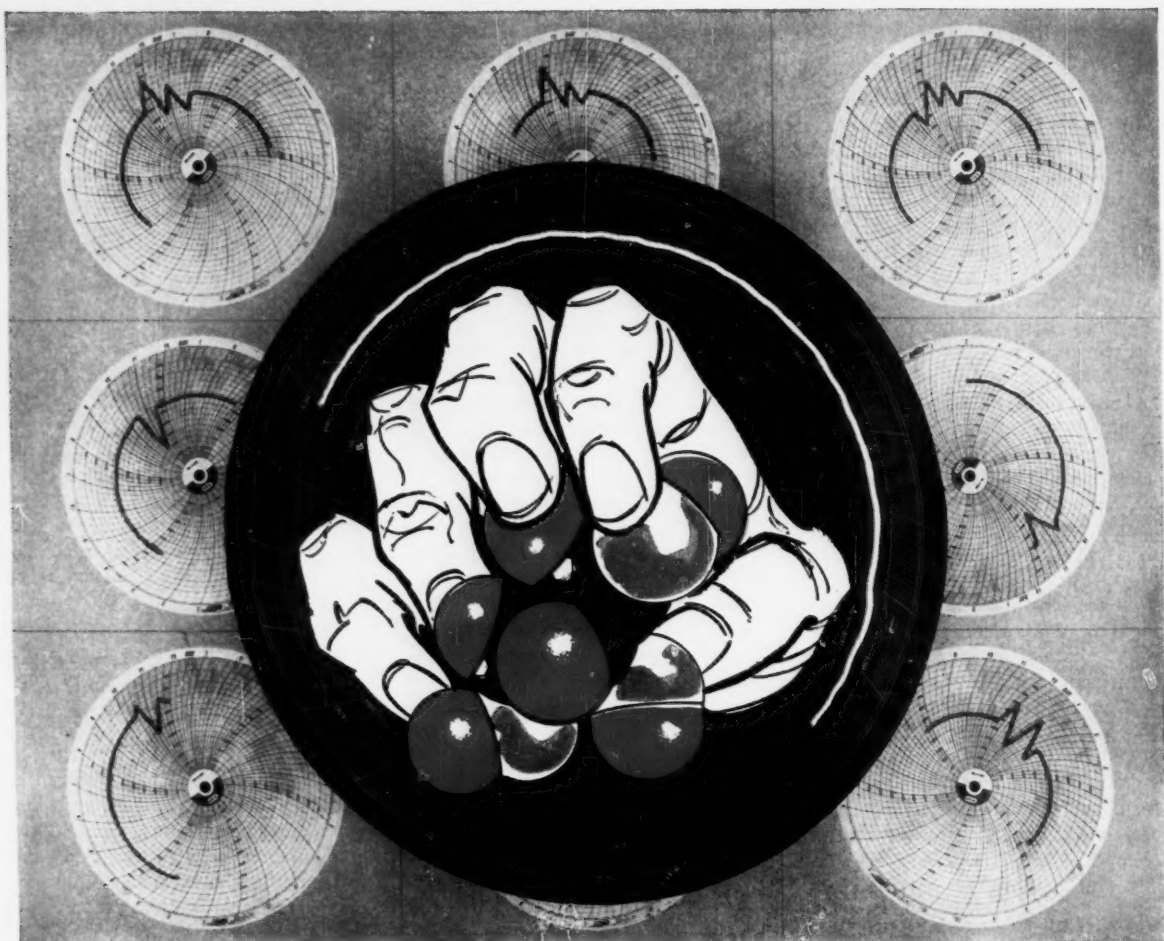
Stress on PR: MCA would not have been successful in its pitch to

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'Young Turks,' who helped modernize MCA: Charles Munson, William Ward and the late George Merck.



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become a significant voice of the chemical industry without an ambitious public relations program.

The association made a low-budget PR start on its own in '49, later retained Hill & Knowlton, New York PR firm, to whip up a professional program. The relationship lasted about two years. There was some talk at the time that Hill & Knowlton's fees were too high for MCA's modest PR budget.

"That question probably would have come up," recalls H&K's John Hill, "but it actually hadn't when the MCA account was closed in Oct. '53. It was a case, rather, of our having fulfilled the understanding that we would develop a workable program for the association."

The alternative to an outside agency was re-establishment of an internal PR group. This was more in line with the zeal of some MCA officials, including newly elected President Foster, for a strong and independent association. Foster, too, preferred a Washington location for the activity.

Subsequently Pennsalt's Cleveland "Bud" Lane and Air Reduction's George Worden, members of MCA's public relations advisory committee, gave up their industry jobs to accept the tough MCA assignment. Lane is assistant to the president, supervises MCA public relations, publicity, publications and the education program. (Worden last month resigned as director of public relations to start his own PR firm in Washington, but will continue with MCA as consultant.) This year, MCA's PR expenses will run to something over a quarter of a million dollars.

Besides the usual PR functions, MCA's staff publishes a biennial "Chemical Industry Facts Book," puts out *Chemical News*, a bimonthly newspaper-style publication (circulation, about 33,000); and coordinates industry-wide observance of Chemical Progress Week.

Giants' Playground? Makeup of MCA's many committees occasionally sparks criticism that the association is run by the big companies, which appear to have greater representation on committees.

Few MCA officials, though, hold to that premise. David Dawson, Du Pont vice-president, and a member of the MCA executive committee, sums up the consensus: "Larger companies can afford to spare more people to work on MCA affairs than can the smaller member firms. But

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company affiliations rarely, if ever, influence a committee policy or project; the prime consideration is whether the work undertaken benefits the industry as a whole."

Course Plotted: What of the future? Can MCA continue expanding in membership and in operation and still avoid the ponderosity that could sap its efficiency?

Under its constitution and by-laws, MCA direction lies largely with its board of directors and executive committee. Since the big change of the early '50s, chairmen of these groups have been men willing to move ahead parallel with industry growth, yet cautiously enough to side-step any criticism on being rash.

Here's how Ernest Hart, president of Food Machinery and Chemical, and last year's MCA board chairman, puts it: "Expansion of the association's program, which until recent years was primarily of a technical nature, into more general fields was accomplished with careful deliberation, and the entire membership was kept informed on proposals and developments. New activities were not presumptuously forced on members. We were not unreasonable in our requests for financial support.

"This conservative policy has paid off in general member support and approval almost without exception."

Navigation Needed: There are, of course, shoals to be reckoned with: (1) a growing feeling that the association should, to some extent, move along specific product lines (as the Chlorine Institute does); (2) keeping down the growing cost of MCA membership to a level that eligible but small potential members can afford; (3) provision for greater member participation in technical activities and projects. (Some progress has been made in rounding out the latter through increasing the number of workshops and symposiums, occasionally scheduling regular technical committee meetings—once held only in the East—in other areas, including Canada.)

Although a top-level policy study committee has been examining the policies, organization and long-range program of MCA for more than a year, it's unlikely that future MCA helmsmen will veer too far from the middle-of-the-channel course that has made MCA what more than one chemical management man has called "the classic modern trade association."

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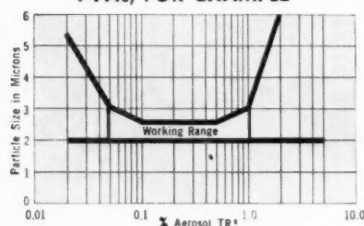
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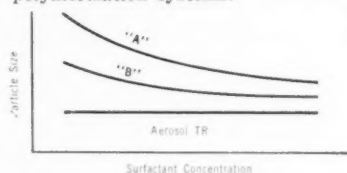
Work done at our Stamford Laboratories has borne out (to our own satisfaction at least) the micelle hypothesis of emulsion polymerization mechanics. At a certain critical concentration (approximately 0.03% in the case of AEROSOL TR), the surfactant ions start grouping into clusters, or "micelles," which act as centers for polymerization activity. We have found that suitable polymerization occurs only in the surfactant

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